AN EVALUATION OF A PAIN MANAGEMENT PROGRAMME FOR CHRONIC PAIN SUFFERERS WHO HAVE SHOWN A COMPLICATED HISTORY OF OPIOID USE

A Thesis
Submitted in partial fulfilment
of the requirements for the Degree
of
Master of Science in Psychology
in the
University of Canterbury
by

Mark Andrew Turner

University of Canterbury
1994

Acknowledgements

I would like to thank the staff of the Burwood Hospital MSM pain service for their support, co-operation and assistance with this study. Thanks also to the participants in this study whose co-operation made this a very interesting learning experience for me and who went out of their way to accommodate the projects requirements.

I would like to gratefully acknowledge Douglas Pharmaceuticals for their financial assistance with this project. Finally I would like to thank Nicholas Kendall, Cynthia Bulik and Barrie Tait whose encouragement and support kept me going.

Table of Contents

List of Tables iv

List of Figures v

Abstract vi

Literature Review 1

General Considerations of Chronic Pain 1

The Evolution of Pain Theories 4

Psychological Influences on Chronic Pain 7

Effects of Chronic Pain 9

Pain management programmes 11

Opioid Therapy 14

Fear of Addiction 16

The Use of Opioids in Chronic Nonmalignant Pain 20

Side effects 24

Why opioids are not used 25

Theories of Addiction 33

Concluding comments 40

Method 43

Subjects 43

Procedure 46

Design 48

Materials 49

Results 56

Means, Standard Deviations and Significant Results for each Questionnaire. 56

Comparison of Database with Opioid and Control Groups 71

Individual Results 76

Discussion 82

Discussion of Results 82

Discussion of Beck Depression Inventory Results 83

Discussion of Multidimensional Pain Inventory Results 85

Comparison of Opioid Group with MSM Database 90

Comparison of Control Group with MSM Database 91

Cognitive differences between the Opioid and Control groups 92
Discussion of Pain Locus of Control Results 92
Discussion of Cognitive Error Questionnaire Results 95
Discussion of PMP Evaluation Questionnaire Results 102
Methodological Issues 104
General Conclusion 111
Concluding Comments 121

References 123

Appendices 139
Appendix 1 139
Appendix 2 140
Appendix 3 144
Appendix 4 149
Appendix 5 152

List of Tables

Table 1	Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up scores for the Opioid Group and Controls for the Beck Depression Inventory	58
Table 2	Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up scores for the Opioid Group and Controls for the Multidimensional Pain Inventory	61-2
Table 3	Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up scores for the Opioid Group and Controls for the Pain Locus of Control Scale	63
Table 4	Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up scores for the Opioid Group and Controls for the Cognitive Error Questionnaire	66
Table 5	Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up scores for the Opioid Group and Controls for the Coping Strategies Questionnaire	70
Table 6	Mean and Standard Deviation (S.D.) answers to the PMP Evaluation Questionnaire	75
Table 7	Selected Individual Scores for the Opioid Group at Pre-test, Post-test and Follow-up	81

List of Figures

Figure 1 Diagram of Research Procedure..... 47

Figure 2 Comparison of Opioid and Control MPI 'Pain Severity' T-scores at Pre- and Post-treatment..... 59

Figure 3 Comparison of Opioid and Control CEQ 'Catastrophisation' (general) T-scores at Pre- and Post-treatment..... 64

Figure 4 Comparison of Opioid and Control CEQ 'Personalisation' (lbp) T-scores at Pre- and Post-treatment..... 65

Figure 5 Comparison of Opioid and Control CSQ 'Praying/ Hoping' Scores at Pre- and Post-treatment..... 67

Figure 6 Comparison of Opioid and Control CSQ 'Catastrophisation' Scores at Pre- and Post-treatment..... 68

Figure 7 Comparison of MPI 'Pain Severity' T-scores for Opioid, Control and Comparison Groups at Pre- and Post-treatment..... 72

Abstract

A complicated history of opioid use (uncontrolled dose escalation, drug-seeking behaviours etc.) is thought to contraindicate the long-term use of opioids for people with chronic pain. In addition, many pain management programmes consider detoxification from opioids mandatory if chronic pain is to be successfully treated. In order to investigate this assumption a group of people displaying co-morbid chronic pain and drug addiction (as defined by Portenoy, 1990) participated in the standard Burwood multi-disciplinary pain management programme. The subject group of seven males had an average age of 35 (S.D.=6.55) and an average pain duration of 139 months (S.D.=70.2). The participants were assessed at pre-treatment, post-treatment and two month follow-up using the Beck Depression Inventory (BDI), Multidimensional Pain Inventory (MPI), Cognitive Error Questionnaire (CEQ), Coping Strategies Questionnaire (CSQ) and Pain Locus of Control Scale (PLoC). Significant changes in outcome measures were observed in this previously considered untreatable group. Significant differences were also found with a control group of three males and three females (average age of 40 (S.D.=7.88) and an average pain duration of 42 months (S.D.=22.91)) but not with the Burwood database results (which included all participants in the programme with complete data from February 1991until February 1992) for the BDI and MPI.

Literature Review

Chronic pain is a major health problem that affects the lives of many thousands of New Zealanders. No figures are available on the extent of chronic pain in New Zealand although a study by James, Large, Bushnell & Wells (1991) reports that over 80% of adult New Zealanders have had pain that interfered with their life or activities 'a lot'. Although no accurate figures are available, Bonica (1990a) stated that evidence suggests that in the United States and other industrialised nations 25-30% of the population suffer from chronic pain. Nicholas (1992) suggests that 10% of the population experience chronic pain at any one time.

Pain is by far the most common reason for people to seek help from a physician (Melzack & Wall, 1988). "Pain is a major plague that saps the strength of society" (Melzack, 1988; p. 10). This means that not only is pain a major health issue but also, because chronic pain impairs the ability to carry out a productive life, it is a serious economic problem as well. Burry & Gravis (1988) report that of those people who receive Accident Compensation Corporation payments in New Zealand, the 5.3% who had been off work for six months or more with back injuries received 50% of the total compensation payments.

General Considerations of Chronic Pain

Many people consider chronic pain to be pain that persists for more than 6 months (Black, 1975). This is an arbitrary time period and some people consider a set period of time to be inappropriate. Bonica (1990a) suggests that chronic pain is pain that persists one month beyond the usual course of an

acute disease or a reasonable time for an injury to heal, or that is associated with a chronic pathological process that causes continuous pain or the pain recurs at intervals for months or years. Bonica argues that one of the clinical implications of this definition is that rather than wait 6 months before intervening, efforts should be made to inhibit the development of chronic pain as soon as possible after the normal period of recovery.

Pain from an acute injury has a clear purpose, to warn the body to protect itself and seek help, and to learn not to repeat the experience. Chronic pain, on the other hand, delivers no beneficial message. No longer a symptom of disease, pain becomes a disease itself as the person's life begins to revolve around their suffering (Stark, 1985). This is a fundamental difference: acute pain serves a useful purpose and chronic pain does not. There is no universally accepted definition for the word pain partly because the word represents a vast *category* of varying experiences. Merskey et al. (1986, in Melzack & Wall (1988)) define pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. This definition recognises the loose association between actual damage and pain and the role of emotional experience in the perception of pain. The prevalence of chronic pain in so many disorders of varying etiology does not allow for a single explanatory mechanism.

Pain is a perceptual experience whose quality and intensity are influenced by the unique past history of the individual, by the meaning they give to the pain producing situation and by their 'state of mind' at the moment (Melzack & Wall, 1988; p. 32). Pain is a personal experience, it is not possible to know what someone else's pain feels like. For example, no man will ever know what it is like to suffer the pain of childbirth.

The phenomenon of pain can be divided into four domains: nociception, pain, suffering, and pain behaviour (Loeser & Egan, 1989). Nociception is the detection of tissue damage and the central propagation of this information via A delta and C fibres in the peripheral nerves (For a detailed consideration of the anatomical and physiologic basis of nociception and pain, refer Bonica, 1990b). Pain is the recognition of these signals by the central nervous system (or problems within the nervous system which suggests tissue damage). Suffering is the negative affective response to pain or other emotionally laden events such as anxiety or depression. In many people with pain and these other events that contribute to suffering, the language of pain is used to describe the suffering and they are diagnosed as if the only cause were tissue damage. This can lead to inappropriate treatment; for example, the prescription of opioids to treat expressed suffering that may be enhanced by anxiety or depression. Pain behaviour is what a person does or does not do or say that leads the observer to infer that the subject is suffering from a noxious stimulus.

The first three domains are internal private features of the pain experience. In many cases (but not all) the amount of pain that an individual should be experiencing can be estimated in proportion to the amount of damage that is evident. As we have seen however, the level of suffering that an individual experiences is dependent on a number of factors apart from just physical damage. Regardless of the physical processes involved, psychological and environmental factors also play a major role. The idea that other factors apart from physical damage can influence the perception of pain has received relatively little attention until the last few years.

The Evolution of Pain Theories

The traditional theory of pain is known as 'specificity theory' and the best classical description of the theory was provided by Descartes in 1664. This approach conceptualised the experience of pain as a purely sensory phenomenon determined exclusively by the amount of physical damage present. Specificity theory proposes that a specific pain system carries messages from pain receptors in the skin directly to a pain centre in the brain (see Melzack & Wall (1988) for a detailed analysis of the development of specificity theory). The Cartesian view of pain gained ascendance in the late 1800's with advances in sensory physiology and psychophysics. Psychological factors, when considered at all, were relegated to positions of secondary interest (Turk & Rudy, 1986) and considered to be reactions to pain. For a more thorough examination of the early theories of pain refer Bonica (1990c).

Despite significant advances in pain research being made by this, and subsequent theories, it became obvious that in many cases permanent amelioration of pain was not being achieved. In addition, it was observed that people responded quite differently to the same pain syndrome and reported widely different benefits from the same treatment. Seeing the inadequacy of current theories to explain these anomalies Melzack & Wall (1965) proposed a new model of pain. The Gate Control Model holds that pain intensity is determined by multiple factors. Melzack and his colleagues suggested that cognitive-evaluative and motivational-affective factors interact with sensory phenomena to produce pain. The conceptual model of the gate control theory emphasises the modulation of pain by peripheral as well as central nervous system processes and thus provides a physiological basis for the role of psychological processes in chronic pain (Turk & Rudy, 1992). Although this theory looks at the systems that influence the processing

of nociceptive stimulation it cannot account for chronic pain occurring in the absence of tissue damage or other "organic" pathology.

In response to this criticism, Fordyce developed the operant conditioning model (Fordyce, 1976). Fordyce distinguished between respondant pain, which is pain resulting from stimuli arising from body damage, and operant pain, which may or may not be associated with actual body damage. As pain is not directly observable, all that can be known about the pain is based on communications from the individual which can be verbal or nonverbal. These communications of pain are observable, behavioural manifestations and, as such, are subject to the principles of operant conditioning. Positive reinforcers, such as solicitous responses from a spouse or family member, may serve to maintain the pain behaviours even in the absence of nociception. Fordyce emphasised that the overt manifestations of pain and suffering (pain behaviours), rather than pain *per se*, should be the target of treatment interventions.

Although the gate control model and the operant conditioning model differ in their views of pain, they may actually be complementary (Turk & Rudy, 1986). Turk, Meichenbaum & Genest (1983) developed a cognitive-behavioural model in which people with chronic pain are viewed as active processors of information. The cognitive-behavioural perspective suggests that behaviour and emotions are influenced by interpretations of events, rather than only by characteristics of the event itself.

According to this model, it is the individual's *perspective* that interacts reciprocally with emotional factors, sensory phenomena, and behavioural responses. Pain perception is a dynamic, interpretative process. Moreover, the individual's behaviour will elicit responses from significant others that

can reinforce both adaptive and maladaptive modes of thinking, feeling and behaving (Turk & Rudy, 1986). The cognitive-behavioural perspective integrates Fordyce's emphasis on external reinforcement contingencies and the respondent view of learned fear and avoidance within the framework of an information processing perspective (Turk & Rudy, 1992).

In order to facilitate adaptive coping in people with chronic pain, this approach has developed interventions that attempt to: (a) alter dysfunctional cognitions, such as perceived lack of self-efficacy to control pain, distortion in the interpretation of pain-related events, somatic preoccupation and catastrophising; (b) enhance the individuals use of specific coping strategies; and (c) enhance the individuals confidence in their ability to cope (Turk & Rudy, 1992).

Today pain is thought of as a complex psychobiological phenomenon influenced by psychosocial factors rather than simply a sensory experience arising directly from stimulation of pain receptors (Bandura, O'Leary, Taylor, Gauthier & Gossard, 1987). The effects of chronic pain depend on: (a) the cause/mechanisms, duration, intensity, and quality of the pain; (b) the genetic make up, personality, mentation, attitude, mood, and other psychologic characteristics of the individual; and (c) a variety of sociologic factors including interaction with the family and persons in the work place, the culture/ethnicity of the individual and the financial impact of the pain problem (Bonica, 1990b). Despite advances in pain theories, many people still consider pain to be caused by physiological or psychological factors rather than acknowledging the interrelationship of these factors.

Psychological Influences on Chronic Pain

Recent models and treatments for pain have emphasised the important contribution cognitive factors play in the experience of chronic pain. A number of studies have shown that the level of dysfunction experienced by people with chronic pain is associated more with psychological variables than pathophysiology (See Kleinke, 1992; Turk & Rudy, 1986; Turk & Rudy, 1992).

From the behavioural perspective, many of the problems associated with chronic pain are due to the effects of learning, regardless of the original cause of the pain (Keefe, Gil & Rose, 1986). For example, pain behaviours, such as resting, may be reinforced by the solicitous responses of a concerned spouse or family member (Fordyce, 1976). This can lead to muscle wasting and higher levels of pain if activity is attempted, thus confirming the individual's 'sick role'. Other studies have demonstrated a close link between levels of distress and disability and the individual's beliefs and cognitions about pain (Crisson & Keefe, 1988).

People who experience pain develop ways to reduce, tolerate or minimise their pain and distress. These efforts to deal with pain have been called coping strategies (Rosenstiel & Keefe, 1983). The individual's attitudes towards the efficacy of these coping strategies and their use of them may be important factors in determining how individuals adjust to chronic pain. Coping strategies can be behavioural (for example going for a walk) or cognitive (for example reinterpreting pain sensations) although Kleinke (1992) suggests that people with chronic pain are less likely to use cognitive coping strategies unless they have been specifically taught them.

Coping strategies can also be negative (for example, catastrophising). Rosenstiel & Keefe (1983) found that reported frequency of using specific coping strategies was predictive of pain, functional status and psychological distress above and beyond what may be predicted on the basis of patient history variables. Fernandez & Turk (1989), in a meta-analysis of the utility of cognitive coping strategies, found that "cognitive strategies, when [compared] to no-treatment or positive expectancy alone, reduce pain significantly, and this effect is a substantive one" (p. 132). The use of 'active' coping strategies, such as imagery strategies, is related to lower levels of dysfunction compared to the use of 'passive' coping strategies (such as relying on the help of others or use of medication).

As the data suggest that coping plays a role in the individual's adjustment to chronic pain, it is important to determine the factors that influence coping efforts. The individual's beliefs about their capabilities appear to be predictive of their behaviour (Bandura, 1977). From the cognitive-behavioural perspective, the occurrence of coping behaviours is conceptualised as being mediated by the individual's beliefs that situational demands do not exceed coping resources (Turk & Rudy, 1992). Social learning theory (Bandura, 1977) posits that people will engage in coping efforts that they believe are within their capabilities and will result in positive consequences (Jensen, Turner, & Romano, 1991).

A study by Dolce, Crocker & Doleys, (1986) suggests that low efficacy expectancies can contribute to poor treatment response and relapse. Learned helplessness refers to the belief that effective solutions are not available to eliminate or reduce the source of stress (Turk & Rudy, 1992). Flor & Turk (1988) report that greater feelings of helplessness are significantly correlated

with psychological distress and physical disability as well as being predictive of reports of pain and the number of physician visits per year.

In order for an individual to decide if a given situation is 'beyond their control' they must rely on past experience. Efficient processing of information relies on preconceptions and automatic thoughts that occur without conscious awareness. These preconceptions influence what evidence is used in making inferences, such as efficacy beliefs or learned helplessness. Automatic cognitive distortions can have important emotional and behavioural effects. A study by Smith, Follick, Ahern & Adams (1986) found that the level of cognitive distortion shown by people with chronic low back pain is reliably associated with the degree of disability reported by these people.

Biomedical factors, in a majority of cases, appear to instigate the initial report of pain. Over time, however, psychosocial and behavioural factors may serve to exacerbate and maintain levels of perceived pain and, subsequently, disability (Turk & Rudy, 1992).

Effects of Chronic Pain

The effects of chronic pain are influenced by a number of factors and no two people are the same. Some people with chronic pain display none of the following problems although the current literature suggests a widespread belief that all people with chronic pain experience serious physiologic, behavioural, and social effects (Bonica, 1990c). Bonica further suggests that only 3% of people with chronic pain consult specialists in pain management programmes and, because these individuals are typically dysfunctional, this leads to a distorted picture of the effects of chronic pain. Crook & Tunks

(1985) report that people who attend pain management programmes are not representative of people with chronic pain. In actual fact, some people seem to 'rise to the challenge' and accept the problems associated with chronic pain in a seemingly off-hand manner, while another person with the same problem may find chronic pain to be completely overwhelming. What follows is a brief summary of some of the common effects of chronic pain. [For a review of these factors refer Bonica (1990); Pelz & Merskey (1983); for a review of the 'chronic pain syndrome' refer Fordyce, Roberts & Sternbach (1985); for a review of the effects of chronic pain from the social work perspective, refer Roy (1987)].

The average individual can briefly bear, both psychologically and physiologically, even the most severe pain, if such pain is prolonged it exerts effects which cause mental and physical deterioration (Bonica, 1990b). Sleep disturbances are the most common complaint among people with continuous chronic pain (Sternbach, 1984). Not only can pain keep people awake and disturb their sleeping patterns but it also 'wears people down' leading to exhaustion and lack of energy. It can also lead to feelings of irritability. The individual with chronic pain may also become cynical and hostile towards health care professionals, and others, as the pain persists despite countless treatments. Changes in eating patterns are also prevalent, with some people eating more and others eating less than before the development of chronic pain. As mentioned above, persistent chronic pain can also lead to the development of cognitive distortions and feelings of helplessness (Turk & Rudy, 1986).

Many people with chronic pain find they undergo a progressive physical deterioration and loss of interest in their old social activities and interactions (Bonica, 1990b). Chronic pain can lead to the individual

withdrawing from society, developing problems with friends and family and increasingly focusing in on the pain problem. "To summarise the overall nature of social problems encountered by many chronic pain sufferers, it would seem, that they experience loss of many of the major social roles including the occupational ones. In addition, family conflicts are inordinately common in this group of patients and sexual difficulties arise with almost clockwork regularity. Patients are totally dependent on the health-care system and view themselves as victims of the system" (Roy, 1987). Many people also display 'pain behaviours' (Fordyce, 1976) such as excessive resting, pain complaints, grimacing and limping. The pain can become the centre of the individuals life . There can also be financial problems due to an inability to work or the cost of seeking treatment. In short, chronic pain can have a major impact on almost every aspect of the individual's life. However the important point to be considered is that this major impact on the individuals life can easily become disproportionate to the actual problem.

Pain management programmes

The beginning of multi-disciplinary pain clinics can be traced back to the end of World War 2 when Dr. John Bonica realised that many people with chronic pain where not being treated successfully. It became apparent that no one individual knew enough about the complex problems of chronic pain. This lead to the formation of the first pain clinic at the University of Washington School of Medicine. The idea of pain clinics has spread rapidly. Melzack & Wall (1988) suggest there is at least one pain clinic in every major city in the western world. Although each one differs depending on the personality and training of the professionals involved, there are certain principles that a good pain clinic should take account of.

The gate-control theory of pain has provided the conceptual background for new approaches to pain management. The theory argues that pain does not have a single cause and is not even a single entity. As pain is such a complex phenomenon the pharmacological, sensory and psychological methods of pain control do not exclude each other and a rational approach to pain management requires multiple approaches that converge to produce a reduction in suffering (Melzack & Wall, 1988). In multi-disciplinary pain clinics an interchange of ideas can occur and the conditions are conducive to novel, imaginative approaches.

One of the primary goals of a multi-disciplinary pain clinic is the accurate diagnosis of the individuals' needs in order to recommend appropriate strategies for dealing with particular problems. By the time most people present at a pain clinic they have already tried a variety of treatments to 'cure' their chronic pain problem. Part of the assessment procedure is aimed at confirming that all possible treatment options have been exhausted and, if this is not the case, referral is made to the appropriate specialist (Loeser & Egan, 1989).

Cognitive-behavioural treatments for chronic pain are rehabilitative by nature, aiming at a reduction in the disability, distress and pain behaviours associated with the pain rather than 'curing' the pain itself. Generally pain management programmes aim to improve the individual's capacity to cope with pain, such that a successful client might say "Well, I've still got my pain, but it doesn't bother me as much as before" (Nicholas, 1992).

Most pain management programmes are multi-component programmes with each component aimed at addressing a different aspect of the person's problems. There is usually a reactivation component consisting

of various exercise regimes to improve general fitness, muscle strength and help with posture. Relaxation techniques are taught to improve the management of stress, help with sleep difficulties and reduce muscle tension (this may be coupled with biofeedback). Education about chronic pain and its management are provided (Philips, 1988) along with cognitive-behavioural therapy to identify and modify maladaptive thinking processes and coping strategies (Turk, Meichenbaum & Genest, 1983). Occupational therapy may be included to help the client with skills training and work options. Throughout the programme operant-behavioural principles (Fordyce, 1976) are explicitly employed to help the individual increase their activity level and reduce the frequency of pain behaviours (Nicholas, 1992). For a detailed examination of the theory and practice of a multi-disciplinary pain centre refer Loeser & Egan (1989); Holzman & Turk (1986).

Research for the present thesis was undertaken at Burwood Hospital in Christchurch. The aims of the Burwood MSM pain management programme are to decrease levels of distress and increase levels of functioning in people with pain that is musculoskeletal in origin. Different programmes have different aims depending on the orientation of the programme. For example, many overseas programmes are funded by insurance companies with a specific interest in seeing individuals with chronic pain return to work. Loeser & Egan (1989) report that return to work is one of their most important aims (and therefore treatment outcomes). Given the currant employment situation in New Zealand, return to work is not a viable alternative for many people who attend the Burwood programme. This is because many employers would rather hire an able-bodied worker, than someone with chronic pain. Considerations about appropriate measures of long-term outcome not only indicate the sorts of issues that need to be addressed in determining the content of a pain management programme, they also

demonstrate the limitations of attempts to evaluate these programmes in isolation from the context in which they operate (Nicholas, 1992).

The fact that the Burwood pain centre is based under the Musculoskeletal Medicine (MSM) service also distinguishes it from similar American programmes. "...of the 36m patients with chronic pain associated with arthritis, gout, and other musculoskeletal disorders, very few have been seen in multi-disciplinary or interdisciplinary pain clinics or centres." (Bonica, 1990d; p. 190). As the Burwood clinic is run under the Musculoskeletal Medicine department, almost all the people that are referred to this programme have pain that is musculoskeletal in origin. This point has important implications for the consideration of the following section.

Opioid Therapy

Halpern & Robinson (1986) have suggested that with the atmosphere of experimentation following the development of multi-disciplinary pain management programme's the traditional approach of treating chronic pain with opioids has been viewed with disapproval. As multi-disciplinary pain management programmes are considered 'state of the art' in pain management at the moment (Portenoy, 1990) there would appear to be little justification for the continuation of opioid therapy. However, many people do not have access to this type of programme.

Christchurch is the only city in New Zealand with a multi-disciplinary in-patient pain management centre and this has a six month waiting list. In addition, many programmes have high failure and dropout rates (Flor, Fydrich & Turk, 1992) while out of those people that do successfully complete a pain management programme many do not report any significant decrease

in pain severity (Portenoy, 1990). Clinics specialising in the treatment of chronic pain consider detoxification from opioids mandatory if chronic pain is to be treated and function restored (Halpern & Robinson, 1986).

One pain management programme that did try using opioids in conjunction with multi-disciplinary treatment reports that "During the intermittent withdrawal periods [to evaluate physical and psychological dependency] pain invariably increased and function decreased. This strongly suggests that long-term administration of the narcotic is necessary to maintain function in select[ed] patients" (France, Urban & Keefe, 1984). For some people in severe chronic pain, opioids may be the only therapy capable of alleviating their suffering (Merry, Schug, Richards & Large; 1991). These findings would suggest that there is still a place for the use of opioids in the management of chronic pain.

Although our understanding of chronic pain and its mechanisms has changed dramatically in the last 30 years peoples perception of pain has not. Since our earliest days people have been trying to alleviate the suffering caused by chronic pain. Perhaps the earliest recorded reference to the use of opioids comes from the Ebers papyrus (circa 1550 BC) of Egypt where reference is made to the prescription of opium by Isis for Ra's headache (Turk & Genest, 1979). The term 'opioid' refers to any peptide that binds stereospecifically to opioid receptors, regardless of whether it occurs naturally or is chemically synthesised (Poole & Jahr, 1992).

The use of opioids for the control of pain is a misunderstood and controversial area which provokes passionate argument on both sides. The issues involved relate not only to the perceived advantages and disadvantages to the individual opioid user, but also to the impact of opioid

regulation and societal attitudes on medical practice. As most of the literature on this topic originates in the United States, it is necessary to mention their societies' perception of the use of opioids. "...our [U.S.] history with opioids has been marked primarily by problems caused by addiction. This history, which goes well back into the last century, has led to an almost hysterical fear of opioid drugs among the general public, a strongly repressive attitude among drug control and law enforcement officials, and an apprehension surrounding even routine use of opioids and an incompetence in prescribing and administering them among the health care professions" (Friedman, 1990; p S 3).

Even acute pain and chronic cancer pain are under-treated with opioids (Melzack, 1988; Portenoy, 1990). Bonica (1980) concludes that moderate to severe pain is experienced by 40% of people with intermediate stages of cancer and 60-80% of those with advanced cancer. This is despite the fact that the use of morphine can virtually abolish pain in 80-90% of cancer patients (Melzack, 1988). Portenoy (1990) suggests that up to 75% of post operative patients report pain of moderate intensity or greater. The under-utilisation of opioids not only leads to the 'tragedy of needless pain' (Melzack, 1988) but can actually be detrimental to patient recovery and outcome when acute (post operative) pain is experienced (Ready, 1990).

Fear of Addiction

One of the major causes of the under-utilisation of opioids is what has been termed 'opiophobia' (Morgan, 1986). Opiophobia is the under treatment of severe pain "based on an irrational and undocumented fear that appropriate use will lead patients to become addicts" (p. 163). The primary cause of this fear appears to be the confusion of street addicts with people in pain (Melzack, 1988). Schug, Merry & Acland (1991) report that experience

with the clinical use of opioids to treat pain matches neither the experience with abusing street addicts nor the results of laboratory experiments in animals or pain-free volunteers. Friedman (1990) suggests that the difference between drug addicts and pain sufferers is that "while the addict takes his drug to get high, "mellow out" and largely avoid life, the pain patient takes his drug to get on with life" (p. S4).

The fear of creating 'addicts' can lead to a 'self-fulfilling prophesy'. Poor knowledge about opioids and fear of addiction may lead to an under prescription of opioids which often results in inadequate pain management (Morgan, 1986; Portenoy, 1990). This in turn means that the person in pain must engage in increasingly desperate attempts to gain pain relief, including behavioural changes to convince others of the pain's severity. The health care professional sees these attempts at gaining increased doses as evidence of developing dependence on ('addiction' to) opioids and a crises of mistrust develops in a vicious cycle with the person in pain displaying more and more 'evidence of addiction' in an attempt to gain relief from pain. This problem has been labelled 'opioid pseudoaddiction' (Weissman & Haddox, 1989) and, although the symptoms are the same as those shown by true opioid psychologic dependence ('addiction'), develops as a result of inadequate pain relief.

Addiction, in general terms, has been defined as any compulsive activity or involvement that decreases the persons ability to deal with other aspects of their life to the point where that activity or involvement comprises the dominant source of emotional reinforcement and identity for the person (Peele, 1977). The sources of addiction lie more in people than in drug actions and it is the experience itself that people become addicted to (Peele, 1989).

Addiction is a word that has only social determinants. It refers to a life in which drug use has become paramount (Morgan, 1986).

Portenoy (1990) has defined addiction, as relevant to the pain patient administered opioid drugs, as:

> *"....a psychologic and behavioural syndrome characterised by (a) an intense desire for the drug and overwhelming concern about its availability (psychologic dependence); (b) evidence of compulsive drug use (characterised for example by unsanctioned dose escalation ..... ; and/or ....associated behaviours, including manipulation of the... medical system ... (altering prescriptions for example), acquisition of drugs from other ... sources ..., drug hoarding or sales, or unapproved use of other drugs..."* (p. 53).

As this definition is so far removed from the ordinary meaning of addiction it would appear to be inappropriate to say that people who have a 'complicated history of opioid use' are 'addicted'. Such people already face challenging problems and the application of such a negative label can only be counter-productive to their self-esteem and the treatment they receive.

Not only does society fail to distinguish between the legitimate and illegitimate use of opioids but it is the illegitimate image that dominates medical and lay concepts about opioid usage. Messages about the dangers of drug abuse appear continually in the media, while drug addicts are portrayed as desperate, criminal low-lifes. Invariably, when people with chronic pain are thought to be 'addicted' they are classified along with these other types of addicts. "The negative biases directed toward street drug users also seem to be expressed towards chronic pain patients to whom narcotic analgesics have been continuously administered for periods ranging from six months to twenty years" (Halpern & Robinson, 1986).

Another problem with the use of opioids is the inability of people in general, and health care professionals in particular, to understand the distinction between physical dependence and addiction (Friedman, 1990; Morgan, 1986; Portenoy, 1990; Schug, Merry & Acland, 1991). Physical dependence is defined as "the occurrence of withdrawal symptoms after the abrupt discontinuation of a drug or the administration of an antagonist" (Schug, Zech & Grond, 1992). All humans who are treated with opioids for greater than 48 hours will develop physical dependence, manifest by a mild and clinically unimportant flu-like syndrome, on abstinence. Unfortunately, withdrawal has been regarded as the crucial test of addiction (Peele, 1977) in the past and anyone displaying withdrawal symptoms automatically assumed to be addicted.

The occurrence of physical dependence on withdrawal of opioids has been likened to 'becoming wet by entering the water' (Morgan, 1986). That is, withdrawal symptoms are the natural result of the abrupt cessation of opioids. It is the meaning that the individual gives to these symptoms that influences their impact and severity. Withdrawal symptoms can be avoided completely if the individual is gradually tapered off their opioid medications. [Buckley, Sizemore & Charlton (1986) describe in detail the drug withdrawal protocol successfully used at the University of Washington Multi-disciplinary Pain Centre].

Many chronic pain sufferers take their opioid medications on a p.r.n. ('as needed') basis. Failure to maintain constant opioid intake elicits withdrawal reactions that can trigger increased pain and lead to a vicious cycle of increasing doses and increasing pain (Hanson & Gerber, 1990). These problems can usually be remedied by appropriate education and effective

doses at regular time intervals, or, if necessary, the gradual reduction and discontinuation of the opioids.

A related issue is the misunderstanding about the effects of tolerance on the use of opioids. Tolerance describes the need for increasing doses to maintain a defined pharmacodynamic effect such as analgesia (Schug, Zech & Grond, 1992) and has traditionally been regarded as related to the addictive potential of a substance. The misunderstanding regarding the need for increasing doses of opioids to adequately manage pain is due to the 'dual pharmacology' of opioids (McQuay, 1989). There is a marked difference in the response of pain-free volunteers and people in pain with respect to the development of tolerance with the use of opioids. While pain-free volunteers rapidly develop tolerance to opioids, people with chronic pain fail to demonstrate any change with time of the minimum effective analgesic concentration [for example, with pethidine (Glynn & Mather, 1982)]. A recent study by Collin, Poulain, Gauvain-Piquard, Petit, & Pichard-Leandri (1993) reports data that strongly suggests "...that instead of pharmacological tolerance, the main factor resulting in increasing oral morphine requirement in cancer pain management is pain increase due to disease" (p. 319).

The Use of Opioids in Chronic Nonmalignant Pain

There is now general agreement in the literature that opioids should be used in cancer & acute pain, even if this is not the case in the 'real world'. The main reasons for this agreement is that people with cancer pain are going to die anyway and people with acute pain are (by definition) only going to receive opioids for a relatively short period of time. However, considerable debate remains about their use in chronic nonmalignant pain. Here we are presented with a group of people who are going to live for a long time while taking opioids. As mentioned above, the main issue of contention is the

potential for addiction inherent in the use of opioid analgesics. A second consideration is the efficacy of opioids for those with chronic pain. In the mid-1980's a handful of papers began to appear suggesting that, in some selected cases, opioids could be used on a long term basis with few untoward consequences.

Taub (1982) describes 313 people with chronic pain who were treated with opioids for up to six years. The specific diagnoses of these individuals is not described. Although no systematic assessment of efficacy was conducted, no individuals reported uncontrolled, spontaneous pain while in therapy. No significant side effects, toxicity or tolerance were observed. Thirteen people presented management difficulties including prescription forgery and heroin abuse. Although this research reflects the mainly anecdotal nature of many studies in this area (Schug et al., 1992), it is the largest survey yet published showing that opioids can be used in the management of chronic pain.

As many of these studies have been criticised as being methodologically compromised [for example studies by Bouckoms et al. (1992); Maruta, Swanson & Finlayson (1979); Portenoy & Foley (1986); Tennant & Uelman (1983)] they have not been reported in this literature review. For those interested in a review of this literature refer Portenoy (1989). Much of the criticism levelled at these studies is that many do not report objective measures of efficacy. This is partly due to the fact that there is no agreement in the literature regarding what the perceived goal of long term opioid therapy should be (Schug et al., 1991). Is a subjective decrease in the level of pain experienced sufficient justification for the continuation of opioid therapy, or is demonstrable improvement in functioning a prerequisite to accepting efficacy?

Another major concern from an examination of the literature is the variance in the amount of people that gain no benefit from opioids. Portenoy, Foley & Inturrisi (1990) have challenged the concept that certain types of pain are less responsive to opioids by redefining opioid responsiveness as the degree of analgesia obtained following dose escalation to an end-point determined by either analgesia or intolerable and unmanageable side effects. It is questionable whether this advice has been heeded in many of the reported studies (for example see Bouckoms et al. (1992)). What is more, if adequate analgesia is not provided opioid pseudoaddiction may occur.

Several studies have been published that have used 'satisfactory methodologies' (Schug, 1992). France, Urban & Keefe (1984) describe 16 individuals that still required opioid medications after completing the Duke University Medical Centre pain management programme. These people were followed on a regular basis with frequent physical and psychiatric examinations. France and colleagues found no overt long-term side effects or indications of drug seeking behaviour in any of these individuals. They found that the use of opioids helped to suppress the pain sufficiently to allow all subjects to cope with it adequately utilising the other components of the pain management programme. The maximum dose for any subject was equivalent to 20mg of oral methadone per day. "The effectiveness of this low dose may be based on its combination with a tricyclic antidepressant and comprehensive pain management programme" (p. 1381). France et al. report that not only were the other components of the pain management programme partially responsible for the effectiveness of this low dose programme, but these other strategies initially helped to identify the lowest effective opioid dose needed for a particular individual.

Sorge, Steffmann, Lehmkuhl & Pichlmayr (1991) present 'good data' (Schug, 1992) on 775 weeks of treatment (with an individual duration of 11 to 145 weeks) for 12 people with intractable rheumatic pain. The authors report that they had to stop opioid therapy in two individuals due to side-effects, and in one other due to a failure to produce analgesia. The remaining nine individuals achieved sufficient pain relief with no severe side effects, abuse, dependence or tolerance being noted up to a period of two years.

Zenz, Strumpf & Willweber-Strumpf (1990) report on 70 people treated with opioids over an average of 158 days. In more than 50% of these individuals the pain could be effectively controlled by oral opioids. The average pain rating on a visual analog scale dropped from 9.7 to 4.8. The general performance status (as measured by the Karnofsky Performance Status Scale (Karnofsky, Abelman, Craver & Burchenal, (1948)) increased from 63.6% to 74.1%. They also found that the only significant side effect was constipation which can be controlled by additional medication.

Zenz, Strumpf & Tryba (1992) describe 100 people chronically given opioids for treatment of nonmalignant pain. The dose of opioids was increased in 13 of these people and decreased in 21. Good pain relief was reported by 51 individuals and partial relief by 28. Only 21 people had no beneficial effect from opioid therapy. The most common side effects were constipation and nausea. The authors report no cases of respiratory depression or addiction to opioids although ten people were withdrawn from opioids due to 'lack of compliance' (which is not defined). Zenz and colleagues found a strong relationship between pain relief and level of functioning, suggesting that the use of opioids decreased people's pain to an extent that they could carry on with their lives. "Opioid therapy that provides

adequate pain relief does not reduce patients' performance, because the obstacle that the pain represents to them ("pain brake") is no longer the central concern of their daily life" (p. 75).

Although many of these studies have been criticised as being methodologically compromised (Turk & Brody, 1991) they are suggestive that opioids can be used successfully in the management of chronic pain.

Side effects

A fundamental consideration in the assessment of the use of opioids for chronic pain (besides the problems of 'addiction') is the extent of possible adverse effects. The fear of adverse effects are, to a lesser extent, also relevant to the under-utilisation of opioids in acute pain, but when opioids are to be used on a long-term basis their potential side effects are especially relevant. "This under use [of opioids] in the short and long term setting is heavily influenced by the fear of adverse effects" (Schug et al., 1992, p. 201). For example, Sizemore (1989) states "Patients who complain of pain of nonmalignant origin are at high risk of developing serious side effects and toxicity if they continue to rely on narcotics..." (p. 118). An examination of the literature on the adverse effects of long term opioid use would suggest that this may not be the case. Zenz (1991) concludes that the only severe side effect of opioids, when correctly prescribed in chronic pain therapy, is constipation.

Schug et al. (1992) report that the most severe mishaps are related to their respiratory depressant effects although these effects are predictable and reversible with antagonists. There may also be adverse effects on the unborn child. Portenoy (1990) reports that the available data neither conclusively demonstrate nor exclude a substantial risk of subtle neuropsychologic impairment and this is an area where long term studies are needed to

establish a definite answer. Generally, cognitive impairment is negligible when opioids are correctly titrated to relieve pain (Dunlop, 1992) and, as proponents of opioids point out, pain itself can produce considerable cognitive impairment anyway. If opioids are used *inappropriately* , they can lead to problems such as cognitive impairment (Sizemore, 1989).

Pain seems to cancel out most of the side effects associated with opioids including tolerance (Schug et al., 1992), addiction (when not complicated by psychological factors) (Melzack, 1988), cognitive impairment (Bruera, MacMillan, Hanson & MacDonald, 1989) and respiratory depression (Zenz, 1991; Schug et al., 1992).

Several writers on the subject of the adverse effects of opioids contend that side effects and toxicity have probably been overemphasised in the past (Schug et al., 1991; Schug et al., 1992; Zenz, 1991). Almost all opioids produce adverse reactions, but these are generally manageable and non hazardous (Zenz, et al., 1992). (For a detailed examination of the adverse effects of systemic opioid analgesics see Schug et al., 1992).

It would appear that there is a considerable amount of misunderstanding and misconceptions about the use of opioid analgesics. The available data suggest that there is a subpopulation of chronic pain sufferers who may benefit from the use of opioids without undue impairment or excessive risk to society (Friedman, 1990; Melzack, 1990; Portenoy, 1990; Schug et al., 1991; Wall, 1990; Zenz, 1991). Despite the mounting evidence available in the literature, opioids are still under used.

Why opioids are not used

Many American pain management programmes consider detoxification from sedatives and opiates mandatory if chronic pain is to be treated and function restored (Halpern & Robinson, 1986). One possible reason why these programmes are so negative towards the use of opioid medications may be the behavioural orientation of most of these programmes. Bonica (1990a) reports that because of this orientation, these programmes attract people mainly with pain due to operant and psychologic mechanisms. The literature on the use of opioids does not take account of this fact and tends to talk about people in pain as if they were a homogeneous group when in fact published data from pain management programmes are not representative of the general chronic pain population. Although it is not mentioned in the literature, the behavioural orientation of these programmes may be an important contributing factor in why pain management programmes advocate the discontinuation of opioids.

In situations where nociception is not the sole source of suffering, opioids are ill-advised (Butler & Murphy, 1989; Sizemore, 1989). As chronic pain is influenced by psychological and environmental factors as well as nociception, other treatment modalities are necessary to deal with psychological factors (such as depression) that influence or reinforce the pain problem. Related to this issue, pain behaviours may be reinforced by the prescription of opioids (Halpern & Robinson, 1986) which can lead to the continuation of suffering after the original pain problem has gone. Finlayson et al. (1986) report that in many patients an addiction to drugs or alcohol is the main factor that sustains illness behaviour. It would appear that at least part of this problem may be due to taking opioids on a p.r.n. (as required) basis. Berntzen & Gotestam (1987) suggest that the use of a fixed interval schedule, as opposed to p.r.n. which reinforces pain behaviours, will

not lead to the reinforcement of pain behaviours, and may even contribute to their extinction.

Another problem is not that the information on the benefits and potential problems of using opioids is not available, but rather, if we think of the reluctance to use opioids as 'opiophobia' (Morgan, 1986), phobias are notoriously resistant to change. Changing behaviour requires more than just transmitting information. It is the habits of more experienced health care professionals that are passed on to new staff and the information that is taught to these people during their training is replaced by what they actually observe on the job. "Under-treatment is, indeed, "proper" behaviour and they are not chastised but are rewarded for behaving like their fellows" (Morgan, 1986, p. 166). Many doctors are reluctant to prescribe opioids in case they face disciplinary action from health authorities or drug control agencies (Portenoy, 1990). This problem should be greatly reduced once standard guidelines are introduced for the use of opioids.

There are of course other reasons why health care professionals are reluctant to use opioids. Pain is a subjective symptom that cannot be objectively proven or quantified (Weissman & Haddox, 1989). Illicit drug seekers are often extraordinarily devious and clever and once a doctor is known as a 'soft touch' they will be harassed (Syme & Wong, 1989). These two issues can make it difficult for doctors to accept at face value a person's complaint of pain. Health professionals may also be reluctant to prescribe opioids in case their analgesic effects mask the development of further symptoms, postponing correct diagnosis and initiation of proper treatment (Verhaag & Ikeda, 1991). These problems can be greatly reduced by a thorough medical examination, inspection of previous medical history and close liaison with other health professionals.

The use of opioids may also lead to the abuse of physical limitations. Acute pain, which warns the body to protect itself, may be masked by the analgesic effects of opioids and lead to possible excessive wear on already damaged body structures (Hanson & Gerber, 1990). Hanson & Gerber also suggest that reliance on opioids may inhibit the bodies' production of endorphins. Bonica (1990a) reports that there are possibly depletions of serotonin and endorphins associated with chronic pain anyway. Both these factors can cause a decrease in pain tolerance so that even minor injuries can provoke major responses.

Although reports are emerging that suggest that opioid maintenance therapy may be beneficial to some treatment resistant people, these investigators warn that patients with current or past substance abuse should be excluded from this treatment (Portenoy & Foley, 1986; Bouckoms et al., 1992) . Schug et al. (1991) go further and suggest that "A history of substance abuse by the patient, a relative or associate is a (strong) relative contraindication" (p. 237). The guidelines for opioid maintenance therapy presented by Portenoy (1990) seem to sum up the literature. "Evidence of drug hoarding, acquisition of drugs from other physicians, uncontrolled dose escalation, or other aberrant behaviours should be followed by tapering and discontinuation of opioid maintenance therapy" (p. 58). These guidelines have been criticised as being ambiguous (Turk & Brody, 1992).

The classification of drug hoarding as a sign of dependency is also inappropriate. "Virtually any patient who has had symptom control medications prescribed repeatedly will begin to demonstrate 'drug seeking behaviour' as a protective mechanism to prevent withdrawal" (Sizemore, 1989, p. 119). More recent reports have presented findings that question the guidelines proposed by Portenoy, citing case studies of individuals that meet

the above criterion who have been successfully maintained on opioids (Weingarten, 1991) and methadone (Kennedy, & Crowley, 1990). As yet there are no empirically derived, consensually accepted criteria for choosing which patients should be placed on chronic opioid therapy (Turk & Brody, 1992).

The report by Weingarten (1991) involved the presentation of two case studies of individuals who had previous histories of drug abuse and that were now being maintained on oral opioids with no apparent control problems. Kennedy & Crowley (1990) present a pilot study of a methadone maintenance-type treatment for people with both chronic pain and substance abuse. Physicians were asked to refer individuals who were addicted to opioids and seemed to be abusing their medication. Four subjects were admitted to this study but one dropped out within four weeks after being beaten by her husband for attending the clinic. A battery of tests to evaluate mood, pain and function were administered before treatment started and every three months thereafter for 19-21 months. Treatment consisted of changing the current opioid regimen to a daily oral dose of methadone, weekly sessions of behaviourally orientated therapy and weekly random urine specimens. Kennedy and Crowly report that the urine screens were essential to treatment, as Patient C would not admit to drug abuse until after the urine results were obtained and the other two subjects felt supported by the external control of monitored urines.

The authors report that the two subjects who were previously intravenously abusing opioids ceased their needle use. The three subjects who remained in treatment markedly decreased their substance abuse and appear to have improved functionally. It is estimated Subject 1 abused drugs 2.3% of days since beginning the methadone programme (as assessed by urine tests) compared to 100% of days in the year before this study started (as

estimated by self-report). Subject 2 abused drugs 0.2% of days since starting the methadone programme compared to 50% in the year before. Subject 3 abused drugs 26% of days since starting the methadone programme compared to 75% in the year before treatment.

For the purpose of this study one of the most important reasons cited for the discontinuation of opioid maintenance therapy is the negative effects of drug dependence on treatment outcomes of pain management programmes (eg. Maruta, Swanson & Finlayson, 1979). Halpern & Robinson (1986) report that "A literature review shows an amazing paucity of rigorous research in chronic pain patients which supports the widely held belief that medications contribute to dysfunction in chronic pain thus patients require detoxification" (p. 135).

Despite this, other studies have reported decreases in drug use after treatment as constituting favourable outcomes (eg. Newman, Seres, Yospe & Garlington, 1979) but it would appear that the Maruta et al. (1979) report is one of the few studies to actually investigate the effects of drug dependence on treatment outcome. There seem to be several weaknesses inherent in this report. The definitions of dependency and abuse used in the study are poor. Drug abuse was defined as:

> *No medical explanation, as evidenced by objective signs on clinical examination or laboratory or radiologic studies, that ordinarily warrants the sustained use of the drug; and one of the following: (1) use of narcotic medication...on a daily basis for more than a month; (2) use of nonnarcotic pain-related medication .... at the maximum recommended dose or above on a daily basis for more than a month (3) simultaneous*

use of four or more pain medications on a daily basis for more than a month" (p. 242).

While drug dependency was defined as:

No medical explanation, as evidenced by objective signs on clinical examination or laboratory or radiologic studies, that ordinarily warrants the sustained use of the drug; and one of the following: (1)increasing daily dose of narcotic for more than a month (ultimately exceeding the recommended maximum dose); (2) simultaneous use of two kinds of narcotics on a daily basis for more than a month; (3) use of a narcotic on a daily basis for more than a month, with a history of narcotic dependency in the past; (4) increasing daily dose of nonnarcotic drug for more than a month (ultimately exceeding twice the recommended maximum dose) with clinical evidence of physical dependency (p. 242).

'No medical explanation...' implies that all pain syndromes should be objectively provable by current diagnostic technology. This is not the case, the link between pathology and chronic pain can be convoluted (Schug et al., 1991). For example in 70% of lower back pain it is not possible to find any responsible damage (Loeser, 1980). In addition, the use of a narcotic for a month is not a valid indication of drug abuse and reflects an inadequate definition of the meaning of 'addiction'. The authors admit refinement of these definitions and further studies are needed (Maruta et al., 1979), but this study is still used to justify the detoxification of chronic pain sufferers (eg.. Finlayson et al., 1986). It is not surprising that the study failed to discern any major differences between 'non abusers' and 'drug abusers'. Maruta et al. (1979) do however report that there were significant differences in treatment outcome between groups.

These differences may be explained by the goals of treatment which are reported in a separate paper (Swanson, Swenson, Maruta & McPhee; 1976). At referral patients are *"emphatically* [italics added] presented with the following treatment goals.... To live with pain without pain killing medications and sedatives...." (p. 405). Although Swanson and colleagues acknowledge that some people found it an obvious threat to relinquish control over their medication there was no choice in the matter. This decision that must be made between receiving treatment at a pain clinic *or* continuing to take opioid medications could possibly be a major cause of the treatment resistance that is reported.

The fact that many people are 'dependent' on their medication is perhaps the best reason why they should be allowed some input into the timing of their stabilisation or withdrawal from medication. People should be encouraged to withdraw from their medication *while* being shown more appropriate coping strategies rather than before. Turk & Rudy (1990) suggest that this insistence on eliminating opioids means that some people may be unwilling to consider treatment. Certainly there are good reasons to discontinue opioid therapy in a number of cases (for example when there is a large psychological component to the pain), but the literature assumes this course of action to be mandatory.

As the situation stands, most pain management programmes advocate the discontinuation of opioids, despite the report by France, et al. (1984) which suggests that there is a place for opioids as part of a comprehensive treatment programme. A new stream of thought in the literature suggests that opioids may be used in the management of chronic pain but not when a complicated history of opioid use is present. More recently however several authors have

suggested that even these individuals may be successfully maintained on opioids. To find out why this may be the case it is necessary to examine some of the current theories from the field of addiction.

Theories of Addiction

Brickman et al. (1982) have suggested that there are four basic conceptual approaches to understanding addiction. The first is the 'moral model', where the person is held responsible for both acquiring and solving the problem and the 'addict' is someone who lacks the 'moral fibre' to resist temptation. This approach, although having little support in contemporary addiction literature, was predominant during the American Prohibition and is still evident in many peoples' attitudes towards 'drug addicts'. The second approach is the 'enlightenment model'. Here the individual is responsible for the development of the problem but is incapable of changing without relinquishing personal control to a higher power or collective entity (such as Alcoholics Anonymous) to gain 'enlightenment'.

The third model of addiction developed as a response to the victim blaming approach of the first two models and has become known as the 'medical/disease model'. Here the victim is not held responsible for acquiring or solving the problem but rather, those with addictive behaviours are told that they are suffering from a disease, similar to other biological disorders. Addictions are seen as being based on an underlying physical dependency which is usually thought to be rooted in internal body chemistry (such as predisposing genetic influences). This means that the disease process is assumed to be latent even before a person tries a certain chemical and that it remains active (although temporarily 'in remission') even if the reformed addict has not touched an 'addictive substance' in years (Marlatt , 1985).

This model has the advantage of acknowledging the victim has a diagnosable problem which is not the individual's fault. However, by stating that the problem behaviour is a disease, whose symptoms are beyond the control of the individual (like sneezing when we have a cold) we are creating the expectation that the individual cannot control their behaviour. It is these first three theories of addiction that seem implicit in the literature on the use of opioids by people with a complicated history of opioid use. Finlayson, Maruta, Morse & Martin (1986) suggest that "Given the well-known inability of alcoholics and drug addicts to *control* [my italics] their drug use, it follows that abstinence is the most appropriate end point of treatment" (p. 176).

The fourth model of addiction is the 'compensatory model'. In this model the individual is not thought to be responsible for the acquisition of the addictive behaviour, but is capable of 'compensating' for the addiction by taking an active, responsible (self-help) role in the change process. People are thought to be active agents in, not passive victims of, their addictions (Peele, 1985). Incorporating the principles of social learning theory, cognitive psychology and experimental social psychology, this approach views addictive behaviours as over learned maladaptive habit patterns (bad habits).

Just because the behaviour can be described as a habit does not mean that the person can be held responsible for its acquisition, or be capable of exercising voluntary control over the behaviour. It does however mean that these 'bad habits' can be analysed and modified in the same manner as other behaviours. It also means that the process of changing habits involves the active participation and responsibility of the person involved. Central to the compensatory model is the notion that addictive behaviour can best be understood as learned adaptive or functional behaviour in the context of

personal and environmental factors (for example, opioid use is motivated by the individual's attempt to cope with stress and chronic pain) rather than by simple exposure to 'addictive substances' (Marlatt, Baer, Donovan & Kivlahan, 1988; Peele, 1985). Peele & Brodsky (1975) contend that any activity (for example love) can be addictive if participation in that activity reaches such an extent as to be detrimental to the individual or others. (For a more detailed examination of the nature and implications of these four models refer Marlatt et al. (1988), Brickman et al. (1982)).

One of the consequences of this new approach is the idea that through the acquisition of new skills and cognitive strategies, habits can be transformed into behaviours that are under the regulation of higher mental processes involving awareness and responsible decision making (Marlatt, 1985a). It is possible for the individual to learn how to escape from the clutches of a vicious cycle of addiction, regardless of how the habit pattern was originally acquired.

The process of changing a habit pattern involves three separate stages (Marlatt, 1985a). The first stage involves the motivation and commitment to change. This stage is extremely important as premature commitment to change may lead to self-defeating experiences of failure and a reluctance to recommit oneself to the change process. According to Marlatt this stage is often neglected by people working in the field of addiction. If the individual is not completely prepared to change their maladaptive behaviour pattern then the treatment is unlikely to work. This is a major problem in pain management programmes where the individual is told that to enter the programme they must withdraw from opioids.

The second stage of the habit-change process is the implementation of the habit change itself, the act of quitting or the initial application of control strategies to moderate the behaviour. The final and most important stage (Marlatt, 1985a) of the change process is the maintenance stage. It is once the old behaviour has changed that the individual must work the hardest to resist the temptations and stresses of life and the pull of powerful old habit patterns. It is during this maintenance stage that the individual must look at possible lapses to the old behaviour pattern not as failures but as mistakes that can provide 'learning experiences' that can be used to develop more effective coping strategies for the future. The individual may discover, for example, that periods of increased pain (flare-ups) are high risk situations for inappropriate opioid usage and, during these periods, practise new coping skills that have been learnt.

There are several fundamental differences between the medical/disease and the compensatory models of addiction that are relevant to the treatment of individuals who have a complicated history of opioid use. One difference is that in the disease model of addiction the person is thought to be a victim of forces beyond their control. In the case of opioid use this means that the physical dependence that opioids produce has left the individual helpless to do anything about their problem. The essence of the relapse prevention model (Marlatt & Gordon, 1985) (which embodies the principles endorsed by the compensatory model) is that the individual is capable of self-control and can therefore assume responsibility for the process of change.

The goals of treatment from the disease model perspective can only ever be total abstinence as any contact with the addictive substance will inevitably lead to a relapse. Marlatt (1985a) suggests that if the individual is told they will lose all control if they touch the addictive substance, this is

what happens. "The emphasis of the disease model on the dichotomy of abstinence and excess (absolute control vs. loss of control) tends to reinforce the oscillation of addictive behaviours from one extreme to the other by forcing the individual to adopt one or other of these extreme roles" (p. 17). In contrast, the self-control model favours a more individualised selection of treatment goals ranging from abstinence to controlled or moderate use. For a detailed consideration of the role of moderate use in the treatment of addictive behaviours refer Marlatt (1985b).

The controversy over the ability to moderate addictive behaviours began in 1962 when D.L. Davies, a British physician and alcohol researcher, published a report that suggested that 7 'alcoholic' participants in a long-term alcohol treatment study reported a pattern of normal, or controlled, drinking (Davies, 1962). Since this first study, many researchers have replicated these results. Refer Marlatt, Larimer, Baer & Quigley (1993) for a review.

A new goal of treatment in alcohol and other addictions has been termed 'harm reduction'. Harm reduction methods are based on the assumption that addictive behaviours can be placed along a continuum of harmful consequences. The goal of harm reduction techniques is to facilitate the movement from greater to lesser harmful effects of drug use (Marlatt, Larimer, Baer & Quigley, 1993).

Addictive behaviours are thought of as 'bad habits' and, in terms of frequency of occurrence, presumed to lie along a continuum of use rather than being defined in terms of discrete categories. Addictive habits are thought of as controllable behaviours and once the individual has accepted this and learned appropriate coping strategies, moderate use is an appropriate treatment outcome. Individuals can still engage in activities or use

substances that they have previously been addicted to because they have been taught to recognise danger signs of potential relapse and provided with alternative behaviours and cognitions [refer Marlatt & Gordon (1985) for a general description of lifestyle modification procedures or Nicholas (1992) for a more specific consideration of relapse prevention in chronic pain]. Their cognitions have also been modified to treat a lapse from moderate use as a learning experience. This point is of fundamental importance to the treatment of people who have shown a complicated history of opioid use.

From an examination of the literature, it would appear that most pain theorists who write on the topic of addiction use the disease model and justify the tapering and discontinuation of opioids because once the individual has a problem with their use of opioids they will invariably be in danger of misusing their medication in the future. Based on this assumption, abstinence is the only end point of treatment as Finlayson et al. (1986) suggest. If, however, individuals can learn the necessary skills to use their medication in moderation then their may be a place for the use of opioids for people who have shown a complicated history of opioid use, as suggested by Weingarten (1991) and Kennedy, Do & Crowley (1990). The disease/medical model of addiction cannot explain the fact that some people can control their use of such 'powerfully addictive' substances as heroin (refer Zinberg, 1984).

One important advantage of reconceptualising addiction as a controllable behaviour is that treatment for individuals who have been inappropriately prescribed opioids in the first place can begin as an attempt to stabilise their use of opioids. As mentioned earlier, many people refuse treatment in pain management programmes because they fear losing their opioids which they view as their only means of managing their pain. Millar, Leckman, Delany & Tinkcom (1992) report results from a controlled drinking

treatment programme (where the treatment goal is controlled use rather than abstinence) which suggests that moderation of drinking may be a pathway to abstinence for individuals who might not otherwise enter treatment. If total abstinence is rejected and no other options appear available, there is no motivation to make any changes to one's drug taking behaviour (Marlatt, Larimer, Baer & Quigley, 1993). The implications of this finding are two-fold: (1) individuals who might otherwise not attend the programme are willing to enter treatment; and (2) once new appropriate coping strategies are taught to these individuals (or their actual pain problem is identified) they may find no need for the use of opioids.

Another major difference in the two approaches to addiction is how to treat individuals. The treatment procedures used by the disease model approach generally attempt to change the basic personal orientation or belief system of the 'addict' through a combination of confrontation procedures and conversion techniques. Once a required behaviour change has occurred, it is then reinforced by conformity pressures from a peer group (such as Narcotics Anonymous). In contrast, the self-control approach is a combination of behavioural coping skills and cognitive restructuring techniques, including cognitive coping skills. Lifestyle intervention procedures are also incorporated which are aimed to achieve a better balance between the sources of stress and the repertoire of coping responses that are available to the individual (Marlatt, 1985b). These are similar sorts of techniques that are taught during a cognitive-behavioural pain management programme. Nicholas (1992) states that "the basic components of cognitive-behavioural pain management programs can also be seen as contributing to RP" [relapse prevention] (p. 281).

Most pain management programmes aim to provide the individual with new coping responses to replace the use of opioids and other drugs ("skills not pills"). These skills, combined with additional relapse prevention strategies (e.g., Marlatt & Gordon, 1985), may enable even those individuals that show a complicated history of opioid use to stabilise their use of opioids. This is in direct contradiction to the traditional view of this area which suggests that abstinence is the only viable treatment outcome.

The ideal self-control programme should replace maladaptive habit patterns with alternative behaviours and skills, with an emphasis on substitute activities which provide the individual with at least some of the reinforcing consequences associated with the old habit pattern (Marlatt, 1985a). In the case of opioid use, the over-riding reinforcing consequence is relief from pain. The new behaviours and skills are such aspects of the pain management programme as relaxation training, exercise and alternative coping strategies.

From this examination of the theories of addiction it would appear that cognitive-behavioural treatment procedures for addiction are similar to those utilised by pain management programmes and abstinence from the addictive substance may not be the only necessary treatment outcome.

Concluding comments

In one respect this study is an attempt to re-examine the need to discontinue opioid therapy before the individual begins treatment. Halpern & Robinson (1986) state that no evidence exists in the literature addressing opioid maintenance as one treatment modality in comprehensive pain treatment programmes. Certainly there has not been much work done on

this question. A study by France, Urban & Keefe (1984) indicates "... that narcotic analgesics can be effectively used to provide long-term pain control in combination with a comprehensive pain management programme" (p. 1380). It is therefore surprising that this line of research has not been thoroughly investigated.

This study goes one step beyond looking at the use of opioids for chronic nonmalignant pain to look at the efficacy of opioids in conjunction with a pain management programme for those individuals who have shown a complicated history of opioid use. The basic premise behind this study can be summed up by Melzack & Wall (1988) "Every human being has a right to freedom from pain to the extent that our knowledge permits health professionals to achieve this goal" (p. x). When a small percentage of people develop problems with their use of opioids they should not be withdrawn from opioids and left to cope on their own. Rather, positive steps should be taken to find ways to help these individuals. Positive treatment strategies for this challenging population may lead to greater acceptance of opioid therapy in nonmalignant pain.

This study is not an attempt to advocate the indiscriminate use of opioid medications but rather to look at what can be done to help people who find themselves with co-morbid chronic pain and a complicated history of opioid use. Currently this group of people are slipping through the system. Drug rehabilitation centres don't want them because they have chronic pain, general practitioners don't know what to do with people who persistently present demanding strong opioids and the person in pain is caught in the middle.

Although the use of opioids is not widely accepted in the literature there are still a large number of people prescribed these drugs. This is partly due to the fact that many doctors do not know what to do with these people. They severely tax the doctor's limited time and resources and are not infrequently considered 'undesirable' patients (Stimmel, 1983). The easiest answer is to make a referral to another consultant or prescribe the requested pain medications and get on with treating people that can be cured.

The fear of compounding a chronic pain problem with an addiction may lead to the under-utilisation of opioid medications in the first instance. If an addiction is recognised the physician may be reluctant to stop the substance use because of uncertainty that the person can be managed otherwise (Finlayson et al., 1986). The purpose of this study is to investigate a positive approach to the management of these complex health issues and provide treatment options for the physician and the chronic pain sufferer.

The literature on this issue does not give any indication of what to do with people who present with a complicated history of opioid use, except withdraw them from medication. In many cases this course of action may be inappropriate as these people have genuine pain. They are asking to be helped, not to be cast aside as junkies who deserve what they get. A group of clinicians who have been meeting to discuss these issues resolved to ask the Burwood MSM service to try cognitive-behavioural methods of pain management on a group of these people. What follows are the results of this programme.

Method

Subjects

All the participants in this project must have chronic non-malignant pain which is musculoskeletal in origin.

Experimental Group.

The experimental group (which from now on will be referred to as the opioid group) in this study must have demonstrated a complicated history of opioid use and a willingness to stabilise their medication. Confirmation from the individuals' participating in the opioid group that they have a problem with their use of opioids and a wish to do something about it was also required.

A complicated history of opioid use was defined a priori as showing evidence of two or more of the following:

-Drug hoarding

-Acquisition of opioids from other physicians

-Uncontrolled dose escalation

-Use of non-prescribed opioids

-Concern from doctors (or other health-care professionals)

-Convictions for drug-related offences

-Other eg. Previous history of drug or alcohol abuse.

These criteria are loosely based on guidelines in the management of opioid maintenance therapy for nonmalignant pain proposed by Portenoy (1990).

This information was obtained from a review of the medical records of approximately 40 individuals whose names had been collated after a meeting of clinicians working in this area. Although initially the subjects were to be selected at random, the participants turned out to be self-selecting by virtue of the fact that a vast majority of the people on the list could not be contacted or were unavailable for personal reasons. Only two people refused to attend the programme when contacted. Those that were willing and able to participate were given a 1 1/2 day assessment which is standard procedure for all participants in the residential pain management programme. This assessment includes a physical assessment by a Physiotherapist, Occupational Therapist interview, nursing assessment, psychosocial assessment (by a psychologist and a social worker) and a Doctor's assessment.

All 7 of the people who were finally recruited for this programme were males. They had an average age of 35 (S.D.=6.55) and an average pain duration of 139 months (S.D.=70.20). According to the IASP site of pain classification (International Association for the Study of Pain; 1986) 5 of this group were classified as having pain of the 'Lower Back, Lumbar Spine, Sacrum and Coccyx' and 2 as having pain of the 'Upper Shoulder and Upper Limbs'.

Of the seven subjects who participated in this group four freely admitted using their medications intravenously . Four of the seven have spent time in prison, and six had a history of drug and/or alcohol abuse. The subject who did not have an obvious history of abuse was, according to his medical records, 'swallowing bucket-loads of medications in an attempt to gain relief from pain'.

Control Group.

All members of the control group in this study were selected from the waiting list of people wishing to participate in the Musculoskeletal Medicine Pain management programme. In order to participate in this programme people must, after a referral from their doctor, undergo a 1 1/2 day assessment by the pain management service. The pain management service offers other services for those with chronic pain but after the assessment those people who it is thought may benefit from it are asked if they would like to participate in a three week residential pain management programme.

As there is a year long waiting list, the control group consisted of the individuals who were next on the waiting list. No attempt was made to match the two groups by age, sex, pain site or pain duration as it would have been unethical to make people wait any longer than necessary before entering them into the programme. The only additional requirement for participation in the control group used in this study was that the individual must not have shown a complicated history of opioid use.

Eight people from the top of the waiting list were contacted and asked if they were still interested in participating in the programme. Unfortunately two people dropped out at the last minute for personal reasons after initially confirming that they would be attending. The control group therefore consisted of 3 males and 3 females with an average age of 40 (S.D.=7.88) and an average pain duration of 42 months (S.D.=22.91). According to the IASP site of pain classification 5 of the group had pain of the 'Lower Back, Lumbar Spine, Sacrum and Coccyx' and one had pain of the 'Lower Limbs'.

Procedure

As there is only room for eight people on the pain management programme at one time the opioid group went first, followed by the control group. All subjects completed a standard 3 week residential pain management programme although the subjects in the opioid group finished on a Thursday instead of a Friday due to Easter and therefore had one day less.

Basically the programme is a Cognitive-Behavioural treatment programme involving the services of a multi-disciplinary team providing education and skills training. Clients participate in a daily schedule including occupational therapy, relaxation training, hydrotherapy, lectures and physical therapy in an attempt to cope better with chronic pain. For a copy of the programme structure refer to Appendix 1.

At least two weeks prior to starting the programme the participants from the opioid group were contacted and informed consent [refer appendix 2] was obtained during an interview with the head psychologist from the programme and the experimenter. The participants also received instructions on how to complete a 'Pain and medication usage diary' that was to be completed every day for seven weeks (that is, from 2 weeks before, until 2 weeks after the programme was due to finish). At this stage the members of the opioid group were also asked to complete the pre-assessment questionnaires (see below). This was done on an individual basis at the Burwood Pain Management Service.

On the last day of the three week programme all 7 members of the opioid group again completed the questionnaires and an evaluation of the programme. At two months follow-up one individual refused to complete

the questionnaires and one was not able to be contacted. The remaining five members of the opioid group again completed the questionnaires and evaluation.

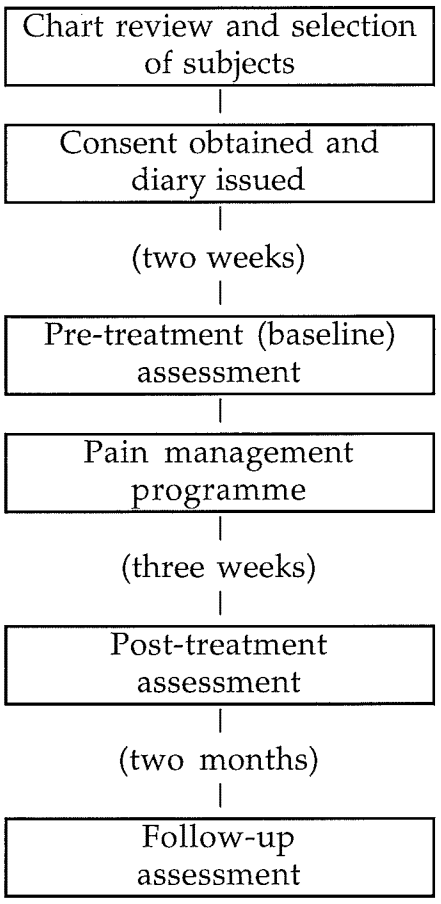

Figure 1:
Diagram of Research Procedure

As the participants in the control group came from as far as 400 kilometres away, they were contacted by mail, provided a consent form and asked to begin filling out the 'Pain and medication usage diary', with a covering letter included explaining what this additional information would be used for. The pre-treatment questionnaires were given to this group on the first morning of the programme. They also brought along their consent forms on that day. Several members of the control group had already rung with

questions relating to this study and any unresolved issues were dealt with at this stage.

The control group completed the same programme as the opioid group and filled out their post-treatment questionnaires on the last day of the programme. Two months after the completion of the programme, the control group was invited back to Burwood for a follow up evaluation which is standard practice. Two people did not show up but the others again completed the questionnaires and evaluation.

It should be noted that there were several differences between the two groups. The opioid group had one day less at the end of the programme (due to Easter) and had been doing less strenuous activities prior to completing the post-treatment questionnaires which may have affected pain ratings. Another way in which the two programmes differed was due to the characteristics of the individuals in the two groups. The members of the opioid group were generally suspicious of the motives behind their programme and for at least the first week were reluctant to participate in set activities, with some individuals consistently arriving late, if at all, to the sessions. Although the opioid group took longer to accept the programme and then lost a day at the end every attempt was made to ensure that the two programmes were as similar as possible.

Design

This study was a two group pre, post and follow-up design. The between factor was group (opioid vs. control) and the within factor was assessment time (pre, post and follow-up). Data were analysed using a repeated measures ANOVA with one between and one within factor. The dependent variables

were scores on the various questionnaires used to assess pain level, mood, cognitions etc. The aim of the study was to examine differences within participants scores after they had completed the pain management programme, and also to look at differences between the results of the opioid group and the control group.

Due to the atypical nature of the control group, results for the Beck Depression Inventory and Multidimensional Pain Inventory were also compared to the Burwood database. The Burwood MSM database is comprised of 73 people who have previously gone through the pain management programme. Measures were taken for the MPI and BDI only. Thirteen individuals have been discarded from the results that are presented here due to missing values, leaving 60 people. The average age of the people whose data are presented is 38 (S.D.=10.3, range=17-55) and their average pain duration is 53.1 months (S.D.=49.9, range=3-240).

Of the 28 males and 32 females whose results are reported, 63% reported their primary pain site to be 'Lower Back, Lumbar Spine, Sacrum and Coccyx', according to IASP classification. This compares to 71% (5/7) of the opioid group and 83% (5/6) of the control group reporting their primary pain site in this region.This comparison was conducted using repeated measures ANOVA with the independent variables being group (opioid group vs control group vs database group) and time (pre- vs post-treatment). All analyses were performed using StatView (Abacus, 1986).

Materials

The instruments chosen to measure the dependent variables in this study were selected so as to assess a range of cognitive variables that are

thought to influence the individual's ability to cope successfully with chronic pain. The following instruments were individually administered to each subject as pre-test, post-test and follow-up measures. As very little data exist related to this area, a broad range of response domains was assessed.

Beck Depression Inventory (BDI) (Beck, Rush, Shaw, & Emery, 1979)

The revised Beck Depression Inventory is a 21-item self report instrument used to assess the severity of depression in adults and adolescents. Each of the 21 symptoms is represented by four statements representing increasing levels of depression. It is part of the standard psychometric assessment procedure for the MSM pain management service. The mean coefficient alphas for psychiatric patients and college students are both in the high .80s. The one week test-retest reliability is also within the .80s for both psychiatric and non psychiatric populations (Beck, Steer, & Garbin, 1988).

Multidimensional Pain Inventory (MPI) (Kerns, Turk & Rudy, 1985),

The Multidimensional Pain Inventory, which was formerly known as the West Haven-Yale Multidimensional Pain Inventory (WHYMPI), is a 52 item inventory for the multi-dimensional assessment of chronic pain. It is divided into 3 parts, each containing several subscales. The MPI has been developed within the cognitive-behavioural perspective and examines the impact of pain on the individual's life (Interference, Support, Pain Severity, Self-control and Negative Mood subscales), the responses of 'significant others' to the person's communications of pain (Punishing Responses, Solicitous Responses and Distracting Responses subscales) and the individual's perception of their present activity level (Household Chores, Outdoor Work, Activities Away From Home and Social Activities subscales).

The test-retest reliability of the subscales are in the .62-.91 range and the internal consistency estimates for all scales ranged from .70-.90 (Kerns et al., 1985). The construct validity of this scale was assessed by comparing scores from the MPI with scores from nine well known and established questionnaires. These questionnaires included the Present Pain Intensity and the Total Pain Rating Index scales from the McGill Pain Questionnaire (Melzack, 1975), the Beck Depression Inventory (Beck, Ward, Mendelson, Mock & Erbaugh, (1961), the Depression Adjective Checklist (Lubin, 1965), the State-Trait Anxiety Inventory-State form (Spielberger, Gorsuch & Lushene, 1970), the Health Locus of Control (Wallston, Wallston & DeVellis, 1978) and the Marital Adjustment Scale (Locke & Wallace, 1959). The correlation matrix derived from these measures "suggested converging evidence for the internal as well as the external construct validity of the 12 WHYMPI scales" (Kerns et al., 1985, p. 354).

The MPI is routinely administered to all participants in the Burwood pain management programme. This gives the MPI the additional advantage of a large number of baseline measures which the two groups in this study can be compared to.

The Coping Strategies Questionnaire (CSQ)(Rosenstiel & Keefe, 1983)

The Coping Strategies Questionnaire contains 50 items answered on a 7 point Likert scale from "never do that" to "always do that". The questionnaire assesses the extent to which people with chronic pain use 6 different cognitive coping strategies (Attention divertion, Reinterpreting pain sensations, Coping self statements, Ignoring pain sensations, Praying or Hoping and Catastrophising) and two behavioural coping strategies (increasing activity level and increasing pain behaviour) when they feel pain. The final two questions address the effectiveness of the coping strategies used. This

questionnaire was included to determine whether there was any change in the types of coping strategies used by subjects after completing the programme and also to see if there was any difference between the coping strategies used by the two different groups.

Rosenstiel & Keefe (1983) present data from 61 chronic lower back pain patients which suggests that the subscales of the Coping Strategies Questionnaire have internal reliability (ranging from .71-.85) with one exception, the 'Increasing pain behaviours' had an alpha coefficient of only r=.28. This subscale was dropped from the revised version of the Coping Strategies Questionnaire but has been included in this study as this was the available copy. Main & Waddell (1991) found the test-retest correlations between subscales to be good, ranging from .75-.91.

The evaluation of cognitive factors in chronic pain is a relatively new endeavour and it is difficult to obtain adequate psychometric data on these new scales. Main & Waddell (1991) found a number of psychometric weaknesses in current cognitive measures and concluded that the measures of choice at the moment are the Coping Strategies Questionnaire and the Pain Locus of Control Scale used together. Main & Waddell (1991) were dealing exclusively with the assessment of lower back pain subjects and expressed some doubts as to whether questionnaires developed with a particular type of patient can be applied more widely. As most of the subjects in this study have lower back pain or similar problems these two scales were used.

<u>The Pain Locus of Control Scale (PLoC) (Main, Wood, Spanswick, Roberts & Robson, submitted).</u>

The Pain Locus of Control Scale is a 20 item self report instrument that is answered on a 4 point Likert scale from "very true" to "very untrue." The

pain control scale examines patients beliefs about how well they feel they can control their pain. [Refer Appendix 3.] The pain responsibility scale concerns how far patients feel they are responsible for the management of their pain. In a comparison of the psychometric properties of various cognitive measures in low back pain patients Main & Gordon (1991) suggest that the Pain Locus of Control Scale may be of value in following change and predicting response to treatment. Unfortunately the Pain Locus of Control Scale has yet to be adequately tested and limited data on its psychometric properties are available. The test-retest reliability of the subscales was found to be .95 and .67 by Main & Gordon (1991).

Cognitive Error Questionnaire (CEQ) (Lefebvre, 1981)

The Cognitive Error Questionnaire was designed to detect four cognitive distortions (catastrophising, overgeneralisation, personalisation and selective abstraction) in people with lower back pain. The questionnaire consists of 48 individual vignettes followed by cognitions that reflect one of the four cognitive errors. For example, "You just spent three hours cleaning out the basement. Your spouse, however, doesn't say anything about it. You think to yourself. 'S(he) must think I did a really poor job.'" Subjects rate how similar each cognition is to the thoughts they would have in a similar situation on a 5 point likert scale which ranges from "exactly how I would think" to "not at all like I would think".

The final CEQ is actually a combination of two separate questionnaires. In this revised version half the questions are specifically related to situations involving a lower back pain problem, while the other half are more general. The lower back pain vignettes are structurally identical to the general vignettes but have themes that included a problem, personal limitation or interpretation related to an individual with lower back pain. As not everyone

in the programme had lower back pain, subjects were instructed to either imagine they had back pain or otherwise rephrase each question in their head to relate to their own pain problem. For example instead of thinking "your back hurts...." subjects were instructed to interpret the question as "your neck hurts...".

Information on the psychometric properties of the combined CEQ is rather limited (Main & Waddell, 1991). Lefebvre (1981) reports both (that is, the lower back pain and the general) CEQ have high test-retest reliability (.80-.85), alternate-forms reliability (.76-.82) and internal consistency (.89-.92). It is moderately correlated with the similarly developed Depressed-Distorted Scale (Hammen & Krantz, 1976) with .53-.60 concurrent validity.

Smith, Follick, Ahern & Adams (1986) have reported data suggesting that the level of cognitive distortion is reliably associated with the degree of disability reported by people with lower back pain. A recent article by Kleinke (1992) has suggested that with the promise shown by research into the use of cognitive strategies for coping with chronic pain a new scale has to be developed and that "researchers will want to include the concepts of cognitive skills, helplessness, negative thinking, catastrophizing and cognitive distortion." (Kleinke, 1992, p. 683). At present there is no such scale available and the Cognitive Error Questionnaire is one of the few tests available that looks at cognitive distortion in lower back pain.

Three week Pain Management Programme Evaluation Questionnaire

The 'Three week pain management programme evaluation questionnaire' [refer appendix 4] was a series of 8 questions regarding participants opinions of the programme and their medication usage. The

questions were answered on a 7-point Likert scale, with room available for any comments.

Pain and medication usage diary (PMUD)

The 'pain and medication usage diary' is a 24 hour self report instrument with room provided to record the following: pain severity and mood before and after medication taken, type of medication taken, the situation that lead to medication being taken and any alternative pain control strategies that were used. A copy of the diary is presented in Appendix 5. The PMUD was filled out daily from two weeks before the pain management programme started until two weeks after the programme finished.

Clinical Observations

Each participant in the opioid group was assigned to a staff member of the Burwood Hospital pain management programme for future supervision. The clinical observations presented in this study were compiled with the assistance of these members of the staff.

Results

The results section is divided into 4 subsections:

a) The first section is a presentation of the means, standard deviations and significant results, obtained by using repeated measures ANOVA, for each of the questionnaires used in this study.

b) the second section involves a comparison of the results obtained in this study with those already obtained by the MSM Pain Management Service for the MPI and BDI.

c) the third section involves the presentation of the results of the 'Three week pain management evaluation questionnaire'.

d) The final section is a presentation of the clinical observations of the seven members of the opioid group along with selected individual change scores.

Means, Standard Deviations and Significant Results for each Questionnaire.

Before beginning this research the statistical power of this study was estimated by using the results of the Burwood Musculoskeletal Pain Management Programme pain severity rating before and after treatment (sample size of n=57). The mean pain rating decreased from 51.5 to 45.5. (S.D.=10) and it was reasonable to expect a similar decrease in our subjects. This gave a critical effect size of .51. Using a 5% level of significance and assuming we use a one-tailed test (that is we expect the pain levels to decrease) the use of 16 subjects gives an 69% probability of obtaining a significant result. (Kraemer & Thiemann, 1987).

Due to the poor completion rate for many of the follow-up questionnaires these data were not included in the analysis below as it decreased the statistical power below an acceptable level. For example, from Table 4 it can be seen that during follow-up only 3 members of the Opioid group and 2 members of the Control group completed the CEQ. Repeated measures ANOVAs were performed to investigate significant results from the data obtained from the pre- and post-treatment questionnaires only.

The conventional 0.05 level of significance has been chosen for this analysis. However, because of the small number of subjects in each group, it was thought that some interesting results may have been overlooked. Donaldson (1993) has suggested that "..for many hypotheses, *alpha* =0.05 is unreasonably conservative and unnecessarily compromises power" (p. 12). Related to this study, Donaldson further asserts that if a treatment is inexpensive and safe, and failure to treat is expensive and hazardous, one should accept a higher risk of Type I errors. For these reasons, results that fell between .05-0.10 level of significance have also been included in this results section.

The means and standard deviations of the results of all the questionnaires used in this study are presented in tables 1-5. The numbers of people completing each questionnaire have also been included in brackets. Data were analysed using repeated measures ANOVA with the independent variables being group (opioid vs control) and time (pre vs post-test). All analyses were performed using StatView (Abacus, 1986).

Beck Depression Inventory (BDI)

On the BDI there was a main effect for group with the opioid group being significantly more depressed than the control group $F(1,11)=17.59$, $p<.01$.

There was no significant main effect for time (pre vs post-treatment) in depression scores, however if the results of Subject 1 (whose BDI scores went from 20 at pre-treatment to 40 at post-treatment) are removed from the analysis then there is a main effect for time indicating an overall decrease in depression between pre- and post-treatment $F(1,10)=7.37$; $p<.05$. No significant interaction effect was detected.

Table 1.

Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up Scores for Opioid Group and Controls for the Beck Depression Inventory

Group	Pre-test Mean ± S.D.	Post-test Mean ± S.D.	Follow-up Mean ± S.D.
Opioid	23.2 ± 5.5 (7)	17.0 ± 11.1 (7)	18.0 ± 4.5 (5)
Control	12.6 ± 5.9 (6)	8.2 ± 5.4 (6)	7.2 ± 4.4 (4)

Multidimensional Pain Inventory (MPI)

On the 'Interference' subscale there was a main effect for group with the opioid group reporting higher levels of interference than the control group $F(1,11)=4.66$; $p<0.10$. There was also a main effect for time with both groups reporting less interference at post-treatment $F(1,11)=4.08$; $p<0.10$. There was no significant interaction effect.

On the 'Support' subscale a main effect was found for time with both groups reporting significantly higher levels of support at post-testing $F(1,11)=5.58$; $p<.05$. No significant main effect was found for group, nor was an interaction effect observed.

On the 'Pain Severity' subscale there was a main effect for group with the opioid group reporting significantly higher levels of pain severity than the control group $F(1,11)=5.22$; $p<.05$. An interaction effect between the opioid group and the controls over time was also observed $F(1,11)=4.66$; $p<0.10$. An examination of Figure 2 shows that this effect is due to the opioid group increasing their reported pain severity, while the control group reported a decrease. No significant main effect for time (pre vs post-treatment) was observed.

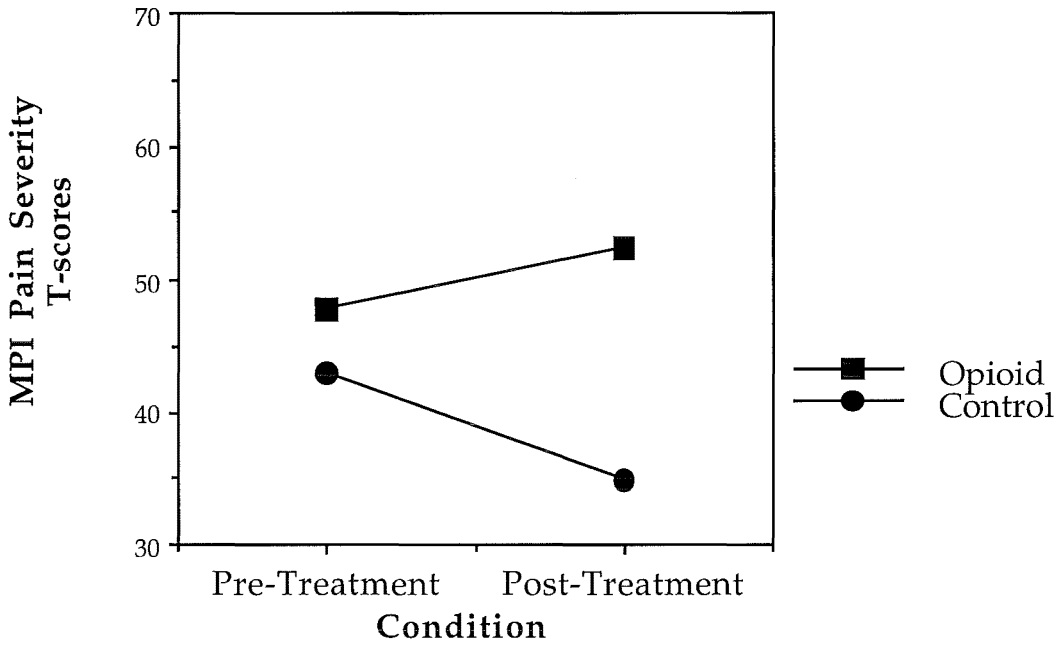

Figure 2
Comparison of Opioid and Control MPI 'Pain Severity' T-Scores at Pre- and Post-treatment

On the 'Distracting Responses' subscale there was a main effect for group with the opioid group reporting higher levels of distracting responses from significant others than the control group $F(1,8)=4.71$; $p<0.10$. No significant main effect was found for time, nor was an interaction effect observed.

On the 'Life Control' subscale a main effect was observed for group with the opioid group reporting lower levels of life control than the control group $F(1,11)=4.44$; $p<0.10$. There was also a main effect for time with both groups reporting higher levels of life control at post-treatment $F(1,11)=8.64$; $p<.05$. No interaction effect was observed.

There was a main effect for group on the 'Affective Distress' subscale with the opioid group reporting significantly higher levels of affective distress than the control group $F(1,11)=8.67$; $p<.05$. There was also a main effect for time with both groups reporting significantly lower scores of affective distress at post-treatment $F(1,11)=6.55$; $p<.05$. No interaction effect was found.

On the 'Outdoor Work' subscale a main effect was found for time with both groups reporting a significant increase in outdoor work at post-treatment $F(1,11)=7.65$; $p<.05$. No main effect was found for group, nor was an interaction effect found.

No significant differences were obtained from the 'Activities Away From Home', the 'Solicitous Responses', the 'Punishing Responses', the Household Chores', the 'Social Activities' or the General Activity Level' subscales.

Table 2

Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up t-scores for Opioid Group and Controls for the Multidimensional Pain Inventory

Subscale		Pre-test Mean ± S.D.	Post-test Mean ± S.D.	Follow-up Mean ± S.D.
Pain Severity	Opioid	47.74 ± 12.20 (7)	52.32 ± 11.94 (7)	48.2 ± 8.67 (5)
	Control	42.84 ± 8.34 (6)	34.82 ± 6.62 (6)	35.00 ± 14.79 (4)
Interference	Opioid	50.11 ± 9.23 (7)	47.02 ± 14.21 (7)	45.60 ± 5.77 (4)
	Control	43.10 ± 7.25 (6)	33.87 ± 6.04 (6)	29.50 ± 9.33 (4)
Life Control	Opioid	44.38 ± 9.52 (7)	53.89 ± 11.96 (7)	49.00 ± 8.60 (5)
	Control	53.70 ± 10.41 (6)	62.84 ± 4.80 (6)	55.00 ± 2.31 (4)
Affective Distress	Opioid	55.28 ± 8.86 (7)	45.08 ± 6.55 (7)	50.80 ± 12.93 (5)
	Control	45.49 ± 7.09 (6)	39.74 ± 6.55 (6)	40.00 ± 8.72 (4)
Support	Opioid	44.16 ± 14.05 (7)	37.64 ± 14.87 (7)	42.60 ± 10.62 (5)
	Control	50.20 ± 8.63 (6)	47.71 ± 10.67 (5)	47.75 ± 11.09 (4)
Punishing Responses	Opioid	54.74 ± 11.26 (6)	56.18 ± 4.40 (6)	56.75 ± 4.27 (4)
	Control	48.76 ± 10.08 (6)	47.60 ± 13.53 (5)	46.00 ± 9.83 (4)
Solicitous Responses	Opioid	52.77 ± 9.35 (5)	48.17 ± 11.73 (6)	53.5 ± 12.77 (4)
	Control	50.32 ± 15.99 (6)	51.13 ± 10.32 (5)	48.50 ± 10.91 (4)

Table 3 (continued)

Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up t-scores for Opioid Group and Controls for the Multidimensional Pain Inventory

Subscale		Pre-test Mean ± S.D.	Post-test Mean ± S.D.	Follow-up Mean ± S.D.
Distracting Responses	Opioid	50.52 ± 5.79 (5)	54.71 ± 11.56 (6)	53.50 ± 13.53 (4)
	Control	43.93 ± 8.39 (6)	42.75 ± 7.21 (5)	47.00 ± 11.28 (4)
Household Chores	Opioid	49.31 ± 11.99 (7)	50.43 ± 11.81 (7)	50.40 ± 12.84 (5)
	Control	54.90 ± 10.59 (6)	52.30 ± 5.63 (6)	59.75 ± 5.69 (4)
Outdoor Work	Opioid	49.19 ± 9.96 (7)	53.12 ± 11.80 (7)	51.80 ± 10.08 (5)
	Control	56.04 ± 12.30 (6)	55.46 ± 11.88 (6)	57.75 ± 3.86 (4)
Activities Away From Home	Opioid	53.81 ± 11.55 (7)	54.94 ± 10.44 (7)	54.20 ± 11.52 (5)
	Control	55.47 ± 11.80 (6)	59.80 ± 12.33 (6)	52.50 ± 12.26 (4)
Social Activities	Opioid	55.52 ± 3.96 (7)	57.07 ± 6.89 (7)	53.80 ± 8.11 (5)
	Control	53.90 ± 9.11 (6)	53.78 ± 6.99 (6)	55.75 ± 9.39 (4)
General Activity Level	Opioid	52.34 ± 7.84 (7)	55.54 ± 11.26 (7)	53.60 ± 13.83 (5)
	Control	57.56 ± 10.08 (6)	57.36 ± 6.00 (6)	60.00 ± 5.10 (4)

Pain Locus of Control (PLC)

On the Pain Responsibility subscale there was a main effect for group with the control group reporting taking significantly more responsibility for the management of their pain than the opioid group $F(1,11)=15.32$; $p<.01$. No significant main effect was found for time, nor was an interaction effect observed.

On the 'Pain Control' subscale there was a main effect for group with the control group reporting having significantly more control over their pain than the opioid group $F(1,11)=11.927$; $p<.01$. No significant main effect was found for time, nor was an interaction effect observed.

Table 3.

Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up Scores for Opioid Group and Controls for the Pain Locus of Control Scale

Subscale		Pre-test Mean± S.D.	Post-test Mean± S.D.	Follow-up Mean± S.D.
Pain Respon-sibility	Opioid	3.29 ± .95 (7)	3.29 ± 2.29 (7)	3.20 ± 2.17 (5)
	Control	7.83 ± 3.06 (6)	8.50 ± 3.27 (6)	10.50 ± 3.70 (4)
Pain Control	Opioid	7.14 ± 3.89 (7)	10.86 ± 4.60 (7)	8.6 ± 5.50 (5)
	Control	16.67 ± 5.35 (6)	17.00 ± 5.40 (6)	11.75 ± 7.00 (4)

Cognitive Error Questionnaire (CEQ)

A significant interaction effect was found between the opioid and control group over time for the 'Catastrophisation (general)' subscale $F(1,10)=5.55$; $p<.05$. No main effects were found for time or group.

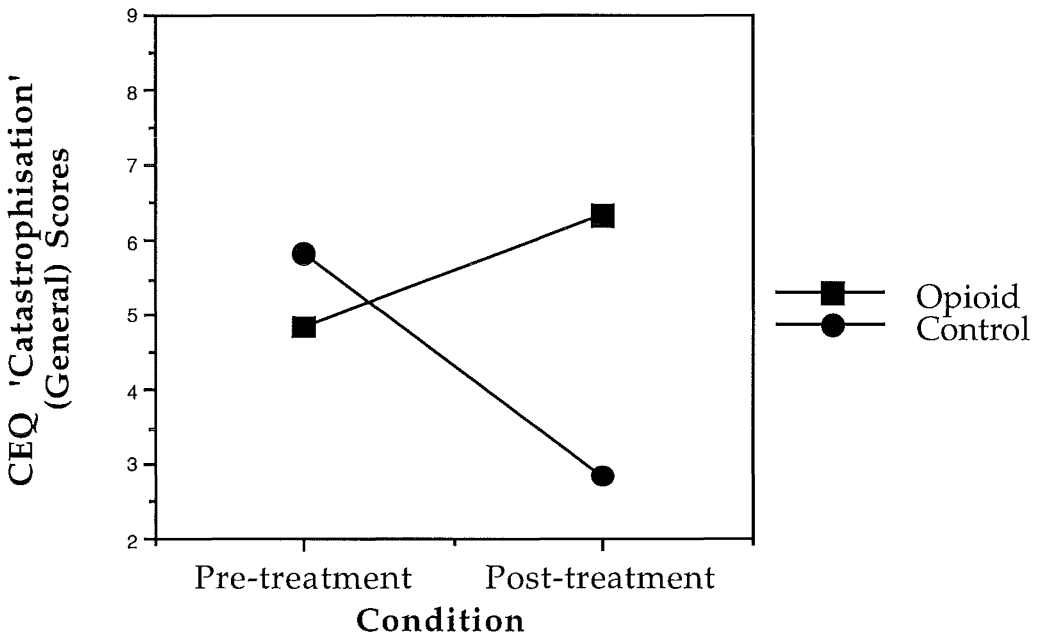

Figure 3
Comparison of Opioid and Control CEQ 'Catastrophisation' (General) Scores at Pre- and Post-treatment

On the Catastrophisation (lbp) subscale there was a main effect for time indicating a decrease in the tendency for both groups to catastrophise at post-treatment $F(1,10)=7.156$; $p<.05$. No significant main effect was found for group, nor was an interaction effect observed.

No significant differences were found from the Personalisation (general) subscale.

A significant interaction effect was found between the opioid and control group over time for the Personalisation (lbp) subscale $F(1,10)=6.524$; $p<.05$. No main effects were found for time or group.

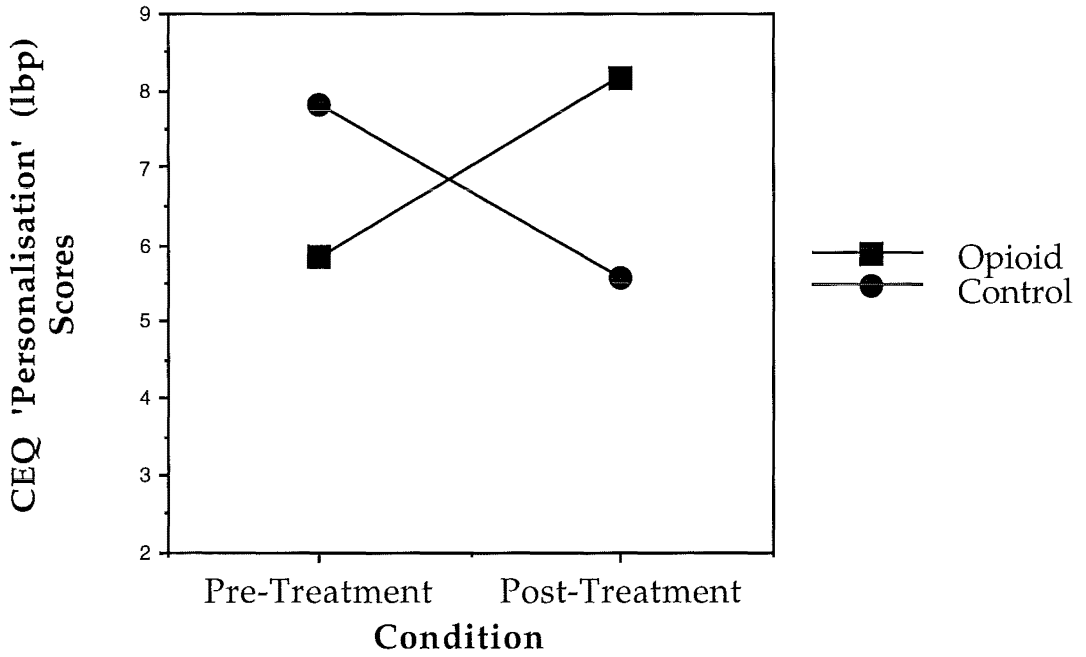

Figure 4
Comparison of Opioid and Control CEQ 'Personalisation' (lbp) Scores at Pre- and Post-Treatment

On the 'Selective Abstraction (lbp)' subscale there was a main effect for time with both groups showing a significant decrease in the tendency to selectively attend to negative aspects of experiences at post-treatment $F(1,10)=6.528$; $p<.05$. No significant main effect was found for group, nor was an interaction effect observed.

No significant differences were found from the 'Selective Abstraction (General)' subscale, or either of the 'Overgeneralisation' subscales.

Table 4.

Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up Scores for Opioid Group and Controls for the Cognitive Error Questionnaire

Subscale		Pre-test Mean ± S.D.	Post-test Mean ± S.D.	Follow-up Mean ± S.D.
Catastrophisation (g)	Opioid	4.57 ± 4.04 (7)	6.33 ± 6.02 (6)	6.33 ± 3.06 (4)
	Control	5.83 ± 2.93 (6)	2.83 ± 2.48 (6)	1.00 ± 1.41 (2)
Catastrophisation (lbp)	Opioid	9.43 ± 6.13 (7)	7.83 ± 4.62 (6)	10.00 ± 6.00 (4)
	Control	8.50 ± 4.23 (6)	4.33 ± 4.13 (6)	1.00 ± 1.41 (2)
Over-generalisation (g)	Opioid	4.00 ± 3.37 (7)	5.67 ± 5.35 (6)	8.00 ± 6.08 (3)
	Control	6.50 ± 4.51 (6)	3.67 ± 3.72 (6)	0.50 ± 0.71 (2)
Over-generalisation (lbp)	Opioid	11.43 ± 5.16 (7)	10.00 ± 5.14 (6)	7.33 ± 3.79 (3)
	Control	8.67 ± 4.84 (6)	5.50 ± 4.37 (6)	4.00 ± 5.66 (2)
Personalisation (g)	Opioid	4.57 ± 3.31 (7)	4.83 ± 4.75 (6)	7.67 ± 5.77 (3)
	Control	4.50 ± 2.43 (6)	3.17 ± 2.99 (6)	1.00 ± 1.41 (2)
Personalisation (lbp)	Opioid	5.71 ± 3.34 (7)	8.16 ± 5.42 (6)	8.33 ± 3.21 (3)
	Control	7.83 ± 2.48 (6)	3.00 ± 2.68 (6)	1.50 ± 2.12 (2)
Selective Abstraction (g)	Opioid	3.43 ± 3.99 (7)	7.17 ± 5.71 (6)	7.67 ± 5.86 (3)
	Control	5.67 ± 3.50 (6)	5.33 ± 4.18 (6)	1.50 ± 2.83 (2)
Selective Abstraction (lbp)	Opioid	10.43 ± 4.08 (7)	7.00 ± 4.38 (6)	6.67 ± 4.93 (3)
	Control	8.17 ± 3.92 (6)	5.33 ± 3.20 (6)	2.00 ± 2.83 (2)

Key

g= general questions **lbp=** lower back pain questions

Coping Strategies Questionnaire (CSQ)

On the 'Reinterpreting Pain Sensations' subscale a main effect was found for group with the control group reporting using this coping strategy

significantly more often than the opioid group F(1,11)=9.13; p<.05. No main effect was found for time nor was an interaction effect detected.

On the 'Coping Self-Statements' subscale a main effect was found for group with the control group reporting using this coping strategy significantly more often than the opioid group F(1,11)=9.05; p<.05. A main effect was also found for time with both groups reporting using this coping strategy less at post- treatment F(1,11)=3.81; p<0.10. No interaction effect was detected.

A main effect for time was detected on the 'Praying/Hoping' subscale with both groups using this strategy less at post-treatment F(1,10)=11.70; p<0.10. No main effect was found for group, however an interaction effect was found between the opioid and control group over time F(1,10)=4.60; p<0.10. Referring to Figure 5, this effect would appear to be due to the control group decreasing their use of this strategy significantly more than the opioid group.

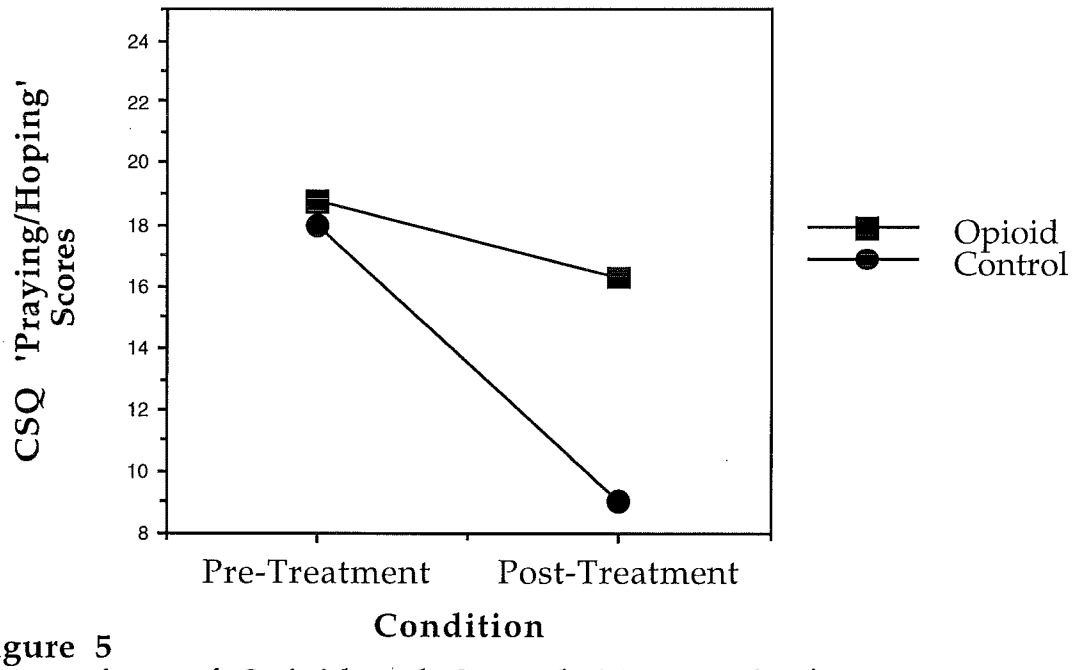

Figure 5
Comparison of Opioid and Control CSQ Praying/ Hoping at Pre- and Post-Treatment

No significant differences were found for the 'Attention Divertion', the 'Activities when in Pain' or 'Displaying Pain Behaviours' subscales.

A main effect for time was found in the 'Catastrophisation' subscale with both groups reporting less catastrophising at post-treatment $F(1,11)=20.71$; $p<.001$. No main effect was found for group but an interaction effect was found between the opioid and control group over time $F(1,11)=5.84$; $p<.05$. Referring to Figure 6, this effect would appear to be due to the control group decreasing their catastrophising significantly more than the opioid group.

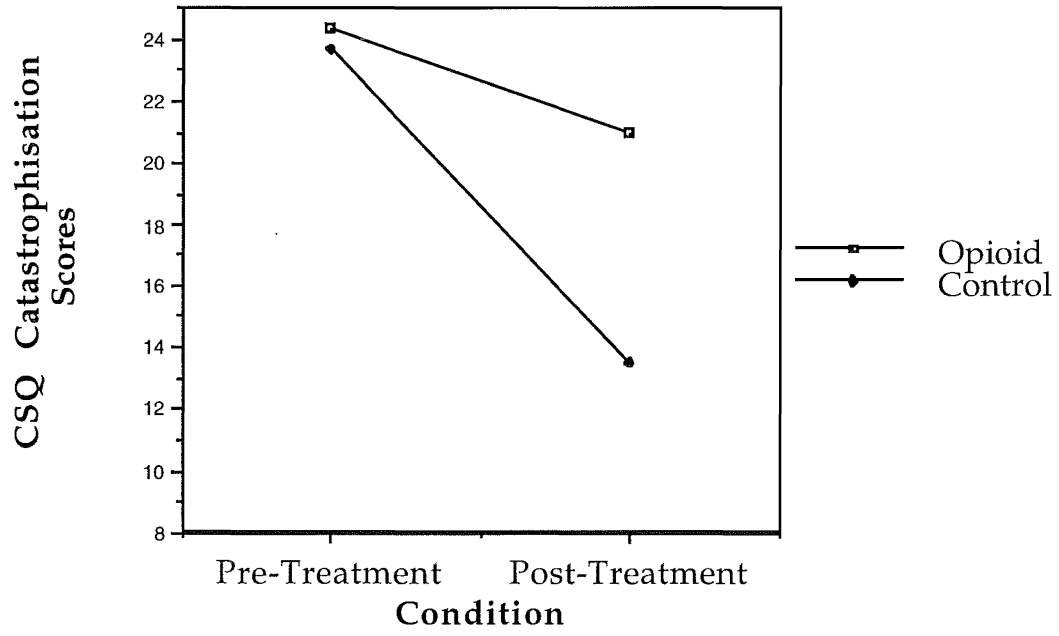

Figure 6
Comparison of Opioid and Control CSQ Catastrophisation Scores at Pre- and Post-Treatment

On the 'Control' subscale there was a main effect for time with both groups reporting an increase in their general ability to control pain at post-treatment $F(1,11)=7.54$; $p<.05$. No main effect was found for group nor was an interaction effect detected.

On the 'Decrease Effectiveness' subscale there was a main effect for time with both groups reporting an increase in their perceived ability to decrease their pain levels at post-treatment $F(1,11)=7.171$; $p<.05$. No main effect was found for group nor was an interaction effect detected.

On the 'Ignoring Pain Sensations' subscale a main effect was found for group with the control group reporting using this coping strategy more often than the opioid group $F(1,11)=4.13$; $p<0.10$. No main effect was found for time nor was an interaction effect detected.

Table 5.

Means and Standard Deviations (S.D.) of Pre-test, Post-test and Follow-up Scores for Opioid Group and Controls for the Coping Strategies Questionnaire

Subscale		Pre-test Mean ± S.D.	Post-test Mean ± S.D.	Follow-up Mean ± S.D.
Attention Divertion	Opioid	17.57 ± 5.26 (7)	19.00 ± 4.20 (7)	10.60 ± 7.30 (5)
	Control	18.00 ± 11.73 (6)	15.83 ± 7.44 (6)	13.50 ± 12.40 (4)
Reinterpretation of Pain Sensations	Opioid	5.14 ± 3.80 (7)	5.14 ± 4.30 (7)	6.40 ± 4.04 (5)
	Control	16.50 ± 12.16 (6)	14.83 ± 7.05 (6)	9.75 ± 13.67 (4)
Coping Self-Statements	Opioid	19.57 ± 5.94 (7)	16.29 ± 4.39 (7)	18.80 ± 1.92 (5)
	Control	27.17 ± 6.85 (6)	24.17 ± 4.36 (6)	23.50 ± 5.45 (4)
Ignoring Pain Sensations	Opioid	13.43 ± 4.76 (7)	12.57 ± 5.19 (7)	9.60 ± 7.23 (5)
	Control	21.00 ± 9.61 (6)	17.00 ± 4.52 (6)	20.50 ± 11.12 (4)
Praying/ Hoping	Opioid	18.71 ± 9.72 (7)	16.29 ± 8.92 (7)	19.20 ± 4.60 (5)
	Control	18.00 ± 6.89 (5)	9.00 ± 7.78 (5)	4.00 ± 3.37 (4)
Catastrophisation	Opioid	24.29 ± 7.06 (7)	21.00 ± 8.12 (7)	22.20 ± 8.29 (5)
	Control	23.67 ± 2.58 (6)	13.50 ± 4.76 (6)	8.25 ± 3.30 (4)
Activities when in Pain	Opioid	21.14 ± 6.99 (7)	20.29 ± 4.89 (7)	18.40 ± 3.71 (5)
	Control	16.83 ± 10.85 (6)	18.33 ± 8.26 (6)	15.75 ± 5.44 (4)
Displaying Pain Behaviours	Opioid	26.71 ± 4.11 (7)	26.71 ± 4.11 (7)	23.00 ± 3.54 (5)
	Control	21.00 ± 6.78 (6)	20.33 ± 3.14 (6)	19.75 ± 4.03 (4)
Control Pain	Opioid	2.28 ± 1.60 (7)	3.00 ± 1.63 (7)	2.2 ± 1.64 (5)
	Control	2.83 ± 0.48 (6)	4.33± 0.87 (6)	4.25 ± 0.50 (4)
Decrease Effectiveness	Opioid	1.57 ± 1.40 (7)	3.00 ± 1.16 (7)	2.00 ± 1.00 (5)
	Control	2.67 ± 0.82 (6)	3.50 ± 1.05 (6)	2.75 ± 2.06 (4)

Comparison of Database with Opioid and Control Groups

The comparison of the Opioid and Control groups with the MSM database was conducted using repeated measures ANOVA with the independent variables being group (opioid group vs control group vs database group) and time (pre- vs post-treatment). All analyses were performed using StatView (Abacus, 1986). *Post hoc* statistical tests were conducted on the data to determine which groups were significantly different from each other when a main effect for group was discovered. The Tukey hsd (honestly significant difference) was used as it is a fairly conservative test, and therefore less likely to yield a statistically significant result (see eg. Keppel, 1982). This analysis was conducted using CLR ANOVA (Clear Lake Research, 1985).

Beck Depression Inventory (BDI) Results

An analysis of the Beck Depression Inventory (BDI) results found a main effect for group $F(2,34)=6.61$; $p<.01$. A *post hoc* Tukey test revealed that the opioid group was significantly more depressed than the control group at pre-treatment ($p<.05$). A main effect was also found for time with all groups reporting a decrease in BDI scores at post-treatment $F(1,34)=15.61$; $p<.001$. No interaction effect was detected. [Only 24 of the 60 members of the database comparison group had completed the BDI at pre- and post-treatment].

Multidimensional Pain Inventory (MPI) Results

On the MPI 'Pain Severity' subscale a main effect was found for group $F(2,70)=7.36$; $p<.01$. A *post hoc* Tukey test revealed that the control group reported significantly less pain severity than the opioid group ($p<.01$) and the comparison group ($p<.01$). An interaction effect was also found $F(2,70)=3.08$; $p<0.10$. No main effect was found for time.

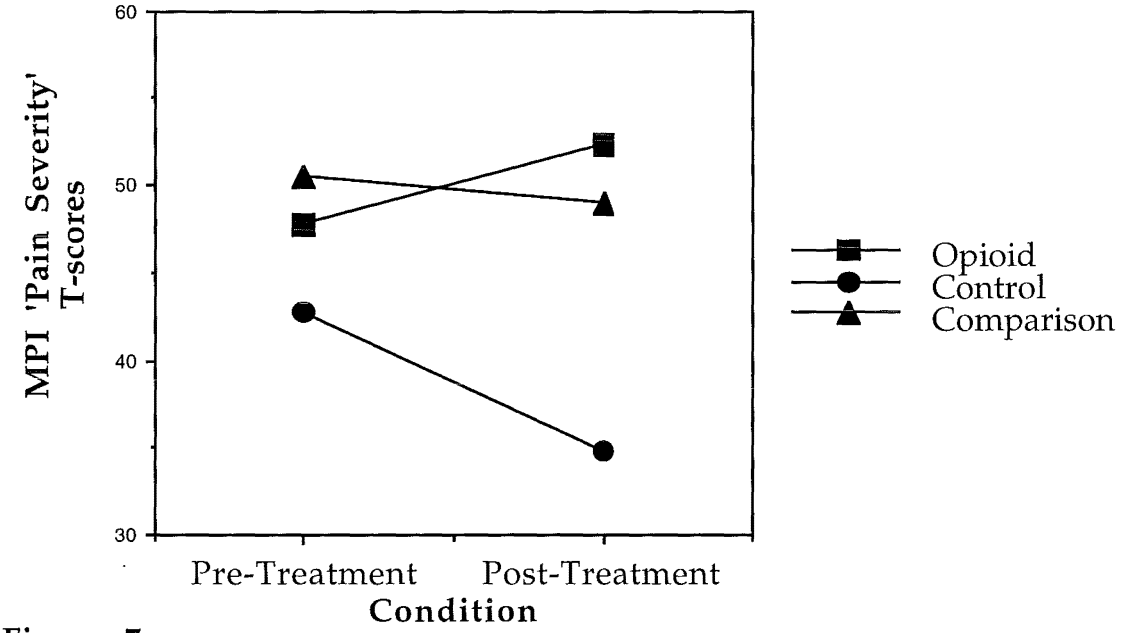

Figure 7
Comparison of MPI 'Pain Severity' T-scores for Opioid, Control and Comparison Groups at Pre- and Post-Treatment

On the MPI 'Interference' subscale a main effect was found for group $F(2,70)=8.64$; $p<.001$. A *post hoc* Tukey test revealed that the control group showed significantly less interference than the opioid group ($p<.01$) and the comparison group ($p<.01$). A main effect was also detected for time with all groups showing a decrease in perceived interference at post-treatment $F(1,70)=18.54$; $p<.0001$. No interaction effect was detected.

On the 'Life Control' subscale a main effect was found for group $F(2,70)=3.64$; $p<.05$. A *post hoc* Tukey test revealed that the control group showed significantly higher levels of life control than the opioid group ($p<.05$). A main effect was also found for time with all groups reporting a significant increase in perceived life control at post-treatment $F(1,70)=33.49$; $p<.0001$. No significant interaction effect was detected.

On the 'Affective Distress' subscale a significant effect was found for time with all groups reporting a significant decrease in perceived distress at post-treatment $F(1,70)=34.08$; $p<.0001$. No significant main effect was found for group nor was an interaction effect detected.

On the 'Support' subscale a significant effect was found for time with all groups reporting a significant decrease in perceived support at post-treatment $F(1,70)=4.09$; $p<.05$. No significant main effect was found for group nor was an interaction effect detected.

On the 'Punishing Responses' subscale a significant effect was found for time with the opioid and comparison groups reporting a significant increase in perceived punishing responses at post-treatment $F(1,67)=8.79$; $p<.01$. No significant main effect was found for group nor was an interaction effect detected.

On the 'Solicitous Responses' subscale a significant effect was found for time with all groups reporting a significant decrease in perceived solicitous responses at post-treatment $F(1,67)=4.78$; $p<.05$. No significant main effect was found for group nor was an interaction effect detected.

On the 'Distracting Responses' subscale a main effect was found for group $F(2,67)=3.20$; $p<.05$. A *post hoc* Tukey test revealed that the opioid group reported significantly higher levels of distracting responses from significant others than the control group ($p<.05$). No significant main effect was found for time nor was an interaction effect detected.

No significant differences were obtained from the 'Household Chores' subscale.

On the 'Outdoor Work' subscale a significant effect was found for time with the opioid and comparison groups reporting a significant increase in outdoor work at post-treatment $F(1,70)=11.51$; $p<.01$. No significant main effect was found for group nor was an interaction effect detected.

On the 'Activities Away From Home' subscale a main effect was found for group $F(2,70)=9.45$; $p<.001$. A *post hoc* Tukey test revealed that the control group reported engaging in significantly more activities away from home than the comparison group ($p<.01$). No significant main effect was found for time nor was an interaction effect detected.

On the 'Social Activities' subscale a significant effect was found for time with the opioid and comparison groups reporting a significant increase in social activities at post-treatment $F(1,70)=19.14$; $p<.0001$. No significant main effect was found for group nor was an interaction effect detected.

On the 'General Activity Level' subscale a significant effect was found for time with the opioid and comparison groups reporting a significant increase in general activity levels at post-treatment $F(1,70)=17.31$; $p<.0001$. No significant main effect was found for group nor was an interaction effect detected.

PMP Evaluation Questionnaire Results

A summary of the Evaluation Questionnaire results are presented in Table 6, with the numbers of people completing each questionnaire in brackets. Analysis using an unpaired two-tailed t-test showed there were no significant differences between the ratings given by the opioid group or the control group for any of the evaluation questionnaires.

Table 6

Mean ± S.D. Answers to PMP Evaluation Questionnaire

Question No.	Group	Post-treatment	Follow-up
How useful was the programme? 1=no use 7=very useful	Opioid	6.00 ± 1.29 (7)	5.00 ± 1.73 (3)
	Control	5.83 ± 1.47 (6)	6.25 ± .96 (4)
Did programme provide useable skills? 1=no 7=yes	Opioid	5.29 ± 1.70 (7)	4.33 ± 2.51 (3)
	Control	5.83 ± 1.17 (6)	4.75 ± 1.50 (4)
Rely less on medication? 1=rely less 7=rely more	Opioid	3.86 ± .69 (7)	4.00 ± 1.00 (3)
	Control	3.00 ± 1.41 (6)	3.00 ± 1.73 (4)
Stabilise medication? 1=very confident 7=not confident	Opioid	3.71 ± .95 (7)	3.00 ± 1.73 (3)
	Control	3.17 ± 1.72 (6)	2.33 ± 1.53 (4)
Continue using new skills? 1=very confident 7=not confident	Opioid	3.57 ± 1.90 (7)	2.67 ± 1.53 (3)
	Control	2.82 ± 2.32 (6)	2.50 ± 1.00 (4)
Would you recommend this programme? 1=no 7=yes	Opioid	6.43 ± .53 (7)	7.00 ± 0.00 (3)
	Control	6.83 ± 0.41 (6)	6.75 ± 0.50 (4)
Do you feel better about yourself? 1=no 7=very much so	Opioid	6.43 ± 0.79 (7)	6.33 ± 0.57 (3)
	Control	6.33 ± 0.82 (6)	5.75 ± 1.26 (4)

Individual Results

This section involves the presentation of individual case descriptions for the opioid group only.

Subject 1

A strong case was presented by the head psychologist at the MSM pain management programme to exclude the results of subject 1 from this analysis. The main reason for this is because this subject was not a very good candidate for a cognitive-behavioural treatment programme. This subject was of below average intelligence (as measured by the WAIS-R (Wechsler, 1981) which was administered before the subject entered the programme) and unable to comprehend much of the theoretical component of the programme. Related to this factor, the subject was expecting a 'miracle cure' from his involvement and no amount of explaining the nature of the programme could deflate his unrealistic expectations of his participation in this programme. Main & Parker (1989) state that "Patients may be considered unsuitable for treatment....because they are still seeking a 'miracle cure' and are not prepared to consider a self-help approach." (p. 141). From the results of Subject 1's questionnaires and follow-up evaluations by clinic staff it is clear that he is still struggling to come to terms with his situation. There are however other people in the same situation and by including his results in this analysis it is hoped that something may be added to the understanding of what can be done for such people.

Subject 1 was perhaps the most severely disabled individual in the opioid group and many of his fellow group members expressed surprise and admiration at how well this subject copes with such severe injuries and pain.

Consultation with staff that have been involved in following up this subject have confirmed that he has made little or no gains since the programme.

Subject 2

This subject was very suspicious of the motives behind the programme from the outset. During the first 8-10 days he was cynical and withdrawn, threatening on several occasions to drop out of the programme. By the end of the programme this individual had stabilised his medication although in answer to the question 'How confident are you that you will be able to maintain stabilised medication levels' this subject responded slightly negatively both at post-treatment and follow-up. Although he had his level of opioids increased just prior to the programme his dose has now stabilised and he reportedly has stopped using his medication intravenously. This subject may be considered at least a partial success, reporting that because of the programme he is happier and able to partake in more activities. Six months after completing the programme he is still attending an ongoing self-help support group for chronic pain, which is based at Burwood, and his medication intake remains stable.

Subject 3

Subject 3 had actually withdrawn himself from all medication just before commencing the pain management programme although he had a history of drug and alcohol abuse and the potential to relapse. This subject was thought of as conservative by most of the other members of the opioid group, and complained at times about the lack of compliance and motivation shown by some members. This subject participated fully in all activities and gained maximum benefit from his participation. When this subject arrived for the programme, he was walking with the aid of a cane which he had discarded by the end. Subject 3 has not used opioid medications since the

completion of the pain management programme although in answer to the question 'How confident are you that you will be able to maintain stabilised medication levels' this subject responded slightly negatively both at post-treatment and follow-up. This suggests that he still experiences a relatively low level of self-efficacy. Despite this it would be reasonable to suggest that this subject gained significant benefit from the pain management programme.

Subject 4

Subject 4 consistently complained that he didn't belong in a group with 'all these drug addicts'. However, an examination of his file revealed a history of alcohol and drug abuse, as well as strong suspicions of current opioid misuse. Early on this subject repeatedly threatened to leave the programme although he participated fully in all activities along with subject 3. Early on this subject appeared to be cynical and lacking in self-esteem. By the end of the programme, he was much more positive and looking at working actively as an artist on completion of the programme. This subject's long-term outcome is unknown as he has not been seen by clinic staff for some months.

Subject 5

This subject had been through the pain management programme previously and for the first week seemed uninterested in participating. This situation was not helped by the fact that he went home at nights rather than staying with the group. The other members of the group described him as 'stand-offish, loudmouthed and negative' and he nearly came to blows with another member of the group in the staff cafeteria. By the end of the programme he was involving himself more in activities but due to his attitude early on could not have obtained maximum benefit from participating in the programme. This subject admitted using his medications intravenously and claimed that participating in the programme had 'cured

him'. In answer to the question 'How confident are you that you will be able to maintain stabilised medication levels' this subject responded that he was extremely positive this was the case. This subject responded extremely positively to all the evaluation questions but at follow-up refused to answer any questionnaires, claiming they were all a waste of time. This subject has not kept in contact with his follow-up staff member from the programme and after consultation with clinic staff it would be reasonable to conclude that he gained little or no benefit from his participation in the programme.

Subject 6

Subject 6 unobtrusively participated in most but not all of the programme. He admitted using his medication intravenously and had contracted hepatitis as a result. He had also spent time in prison for drug-related offences. This subject had a severe dental phobia and needed major dental surgery while on the programme. This procedure was cancelled several times and interfered with his ability to concentrate on the PMP. This subject has not been heard of since the programme and it is strongly suspected that he has continued abusing his medication.

Subject 7

At the initial interview subject 7 was reluctant to join the programme as he wanted to undergo drug detoxification as a priority. He admitted abusing his medication intravenously and showed a willingness to seek help, as his relationship was suffering as a result of this abuse. During the first week of the programme the subject reported that these domestic difficulties resulted in a lack of focus and indifference towards the pain management programme and other members of the group. This subject often appeared to be cognitively impaired by his medication usage and often complained about various aspects of the programme and his medication regime.

This subject had a history of intravenous drug use but had stopped this behaviour prior to developing chronic pain. Although he had his level of opioids increased during the programme his dose has now stabilised and he reportedly has stopped intravenously using his medication. This individual has been closely monitored since completing the programme and it would appear that the programme has been of significant benefit to him.

Table 7

Selected Individual Scores for Opioid Group at Pre- Post- and Follow-up

Measure		Subject						
		1	2	3	4	5	6	7
Depression	Pre	20	26	30	27	16	17	27
Scores	Post	40	17	4	13	13	14	18
(BDI)	F/up	23	18	14	22	*	*	13
Pain	Pre	4	7	3	7	6	8	15
Control	Post	4	8	7	14	13	13	17
(PLoC)	F/up	5	9	5	6	*	*	18
Pain	Pre	3	3	4	2	3	3	5
Respon-	Post	3	4	0	4	4	1	7
sibility	F/up	1	4	1	4	*	*	6
Affective	Pre	61	66	56	50	50	61	40
Distress	Post	53	43	53	40	38	40	48
(MPI)	F/up	69	51	43	56	*	*	35
Pain	Pre	61	33	53	49	57	53	29
Severity	Post	69	41	65	37	57	49	49
(MPI)	F/up	57	45	45	57	*	*	37
Inter-	Pre	58	37	62	49	47	58	41
ference	Post	67	35	62	40	30	56	40
(MPI)	F/up	51	48	38	50	*	*	41

Note: * = subject did not complete questionnaire

Discussion

The discussion section is divided into two subsections:

a) The first section is a summary of the results of the pain management programme.

b) The second section is a discussion of the theoretical and practical implications of these results.

Discussion of Results

The central hypothesis developed for this study was that contrary to the literature, individuals with chronic pain and a complicated history of opioid use would gain as much benefit from participating in the MSM pain management programme as individuals who have chronic pain and no complicated history of opioid use. As the selected control group was atypical of the average group, comparisons were made both with that group and with the Burwood database results (which included all participants in the programme with complete data from February 1991 until February 1992) for the BDI and MPI. It would appear from the results obtained from the MPI and BDI that the opioid group gained similar benefits from the programme as the average participant, as represented by the database results.

The second hypothesis was that there were cognitive differences between the opioid and control groups that would be detected by the CSQ, CEQ and the PLoC. Using repeated measures ANOVAs, some differences were found between these two groups. Of greatest significance is the finding that the opioid group appears to be less amenable to changing cognitive

distortions and resulting maladaptive cognitive coping strategies (for example catastrophising).

Discussion of Beck Depression Inventory (BDI) Results

From the results presented, it can be seen that the members of the Opioid group were significantly more depressed, on average, than the members of the Control group at pre-treatment. This result is probably due to the fact that the control group was coping with chronic pain to a greater degree than the normal participant in the pain management programme. The opioid group was also more depressed than the database average although not to a statistically significant degree.

The opioid group on average scored 23.2 on the BDI while the control group scored 12.6 and the database average at pre-treatment was 16.6. Turner & Ramano (1984) have suggested that a score of 13 is the threshold for signifying the presence of depression in people with chronic pain. This would suggest that the average person who attends the pain management programme is depressed. High scores on the BDI do not actually mean that people are depressed however, as high responses (indicating depression) on many of the BDI questions naturally occur with chronic pain. For example, a person may report sleeplessness or worry about their health but in actual fact this may be perfectly normal behaviour considering their condition.

There was a main effect for time with all groups reporting a decrease in depression levels at post-treatment. This finding reflects a decrease in actual self-reported depression by most people completing the pain management programme. This is an especially important result as the presence of serious depression can seriously complicate treatment (Ward, 1990). The psychobiological theory of learned helplessness may provide an explanation

of these results. This theory predicts that efforts focused on giving the individual a sense of mastery over their pain will lead to a decrease in depression (Ward, 1990) and feelings of helplessness. This speculation is supported by the opioid and control groups both reporting a significant increase in their perceived ability to control their pain and decrease their pain levels (as measured by the CSQ) at post-treatment.

From the results presented in Table 7 it can be seen that one member of the opioid group reported higher levels of depression at post-treatment than at pre-treatment. It is felt however, that this score reflected the subject's unrealistic expectations of the programme and his score had decreased to the pre-treatment level at follow-up. The high post-treatment score shown by Subject 1 can be interpreted as a 'plea for help'. The BDI is used more as a screening measure and to facilitate expressions of distress than as an indicator of depression. At the Burwood pain clinic, diagnosis of depression is only made after an interview with a clinical psychologist.

From the literature, there are no data to suggest that the use of opioids induce depression although they may exacerbate it by increasing fatigue, sleep disturbance and hyperphagia while impairing concentration (Ward, 1990). Sizemore (1989) has suggested a link between depression and high levels of drug use for people with chronic pain because of their effect on mood. However, from a review of the literature, it would appear that relatively little research has been done on the long-term effects of opioid use on mood for people with chronic pain. This is an area that deserves considerable attention. A study by Berntzen & Gotestam (1987) found that the use of a fixed interval analgesic schedule (as opposed to p.r.n.) was more effective in elevating mood in people with chronic pain. This may have been due to the accompanying reduction in subjective pain that was also reported.

Bouckoms et al. (1992) report that, from their clinical findings, the absence of depression was an important ingredient for safe opioid use. As mentioned in the Introduction, if depression is contributing significantly to the chronic pain, opioids are not going to be very effective anyway and may lead to more problems. If chronic pain is causing the depression, then alleviating the pain by the use of opioids may help considerably reduce the depression.

The nature of the depression experienced by people in chronic pain in general, is an area that needs considerable work. While the relation of depression to substance dependence and chronic pain remains unresolved (Finlayson et al., 1986) these syndromes do seem to overlap and more research in this area is needed, especially to assess the role that depression is playing in the individual's chronic pain problem.

Discussion of Multidimensional Pain Inventory (MPI) Results

The results of the MPI were generally quite positive. On most subscales all groups generally showed improvements.

On the 'Pain Severity' subscale both the control group and the database comparison showed a decrease in reported pain severity, while the opioid group showed a slight increase. As the opioid group is quite similar to the database in most measures of the MPI it is not possible to speculate about what factors have lead to the opioid group reporting a higher average level of pain severity at post-treatment than at pre-treatment. Although the difference is small the trend may indicate that the opioid group on average was less responsive to cognitive-behavioural change as the literature suggests.

Cognitive-behavioural treatment programmes do not tend to actually decrease levels of pain severity as the focus is on coping with chronic pain. By the time most participants attend the Burwood pain management programme they have usually tried a large variety of procedures to 'cure' the pain problem. The principal focus in cognitive and behavioural treatments for chronic pain is reduction in the disability, distress and pain behaviours associated with the pain rather than resolution of the pain itself (Fordyce, Roberts & Sternbach, 1985). However, these programmes should not actually increase the level of pain that is reported. Referring to Table 7 it can be seen that four out of seven of the opioid group had increases in reported pain severity at post-treatment. The difference between the opioid group and the database was small and there was no main effect for time evident from the results section which makes any clear interpretation difficult.

The increase in pain levels may be due to higher pain levels at the time the questionnaire was administered, possibly due to high activity levels on the day, and during the preceeding three weeks. An important, and often neglected, consideration in the examination of these results in general is the fact that chronic pain severity (and associated problems) are not stable over time. It could be that the subjects were assessed on a 'good' day at pre-treatment and a 'bad' day at post-treatment. This may however, be an area that warrants further investigation.

All groups showed a decrease in 'Affective Distress' and 'Interference' and an increase in 'Life Control', these are all extremely positive results and are the focus of the cognitive component of the pain management programme. The programme aims to put the pain problem in perspective,

that is, to take peoples attention away from the pain problem as the focus of their lives.

The 'Interference' subscale looks at the perceived impact of chronic pain on the individual's life in general. Questions ask if the pain has affected the satisfaction gained from, and ability to participate in, certain activities and relationships. A major problem for people with chronic pain is the fact that they can not do the things they used to be able to do. These feelings of interference can become overwhelming and the pain management programme aims to assist people to assess their own limitations positively.

The 'Affective Distress' subscale looks at feelings of irritability, tension and overall mood during the past week. Feelings of tension and irritability can actually increase pain levels and for this reason relaxation training is part of the pain management programme. Another reason for the decrease in affective distress is the fact that many participants have previously not had contact with other people with chronic pain and being able to talk (and laugh) positively with people in similar situations is very beneficial.

The 'Life Control' subscale looks at the amount of control the individual has over their life, and problems, during the last week. The pain management programme provides an opportunity for individuals to step out of their lives for three weeks and be 'taken care of' without the worries of their everyday lives impinging. At the same time they are learning about what having chronic pain actually means and how to express themselves. Many people who attend the pain management programme are not aware of what has happened to them or what can be done about it. The programme provides information about relevant services that are available (for example A.C.C., Social Welfare and the medical system), as well as how to express

their needs and limitations positively . The programme also tries to increase the perceived level of control the individual has over their pain, which is usually seen as a major problem area in the individual's life.

All three groups reported a decrease in perceived 'Support' at post-treatment. Although it may seem intuitively that the programme should increase levels of support this is not the case. The pain management programme aims to improve the individual's self-efficacy and feelings of being in charge of their own life. The support subscale looks at such aspects as the perceived attentiveness and support of a significant other to the pain problem and it may be that the perceived decrease is actually due to individuals realising that they do not need as much support as they previously thought. The fact that the control group (who are functioning better judging by all other subscales) reported significantly less 'Distracting Responses' than the opioid group tends to support this theory.

Related to this issue, all three groups also reported a decrease in solicitous responses, which are such things as the significant other taking over chores and getting the individual to rest when in pain. All three groups also reported an increase in punishing responses which include such items as the significant other expressing irritation, frustration or anger at the person with chronic pain. It is difficult to speculate why the participants in the pain management programme perceive that their significant others have increased their punishing responses after they have completed the programme. Generally, a decrease in punishing responses would be expected as the admission to hospital tends to legitimise the pain complaint to significant others.

Although an important aspect of the behavioural model of chronic pain (Fordyce, 1976) the education of significant others about appropriate responses to pain behaviours is not an aspect of chronic pain that receives a great deal of attention at the Burwood pain management programme. This is due to a number of factors including the difficulty of involving significant others in the programme and time constraints of the programme itself. However, if relationship difficulties are thought to be having a significant impact on the individual's life, additional therapy may be included. One of the members of the opioid group, along with his partner, received extra counselling before and after the programme.

It is therefore somewhat surprising to see significant main effects for time appear for the 'Punishing Responses' and Solicitous Responses' subscales although the direction of change is positive for the 'Solicitous Response' subscale. Fordyce (1976) has suggested that people with chronic pain may be reinforced for 'pain behaviours' (for example, receiving sympathy for lying down when in pain) which leads to a continuation of these negative responses to pain. A decrease in solicitous responses and an increase in punishing responses may be due to changes in attitudes of the individual who has completed the Burwood pain management programme rather than any changes in the behaviour of their significant other. Although in the case of the decrease in solicitous responses, perhaps the three weeks that the 'significant other' has without the person with pain being around has given them time to realise they had been too solicitous in the past.

Both the opioid and database groups reported an increase in outdoor work, social activities and general activity level. These results are consistent with the aims of the Burwood pain management programme which

encourages the reactivation of the person with chronic pain. Physical deactivation, which is often associated with chronic pain, leads to weakening and shortening of muscles, ligaments and other soft tissues, which when provoked by activity, produces more pain (Butler & Murphy, 1989).

During the programme several members of the opioid group reported that it was the first time they had been able to 'play' for years. These positive increases in activity level may in part be due to the education sessions aimed at increasing activity levels and also the extensive use of the Burwood hydrotherapy pool during the programme. The use of this pool is a gentle (and enjoyable) way for a person with chronic pain to begin the process of reactivation. The control group did not report any increase on these subscales, possibly due to the fact that the members of this group were already functioning well at pre-treatment.

No significant increases were reported in 'household chores' or 'activities away from home' subscales.

Comparison of Opioid Group with MSM Database

Generally, the opioid group reported similar scores on the MPI subscales as the larger database comparison. This suggests that the members of the opioid group are more similar to the average participant in the pain management programme, as measured by the MPI, than to the members of the selected control group. The fact that there were no significant differences between the opioid group and the database on any of these measures is rather surprising. Spanswick & Main (1989) suggest that there is a close relation between high levels of narcotic consumption and levels of distress which means that the opioid group may have been predicted to show higher scores on the 'Affective Distress' subscale. However, the 'Affective Distress' subscale

measures levels of irritability and overall mood during the past week rather than actual distress. The fact that the opioid group showed similar scores on this subscale indicates that their use of opioids has not had an effect on their reported mood.

These results would suggest that whatever factors contribute to people developing a complicated history of opioid use may not be measured by the MPI. It is possible that other factors are responsible for the development of complications with the use of opioids. Future research might be better directed towards some of the factors that are postulated by researchers in the field of addiction (eg. Peele, 1989; Marlatt & Gordon, 1985). It would also appear that the MPI is insensitive to the distinctions between individuals with a complicated history of opioid use and the average participant in the programme.

It is also interesting that the members of the opioid group did not report higher scores on the 'Pain Severity' subscale than the average participant. This would suggest that it is not just the level of pain that is experienced that is responsible for the initiation of, and subsequent complications with, the use of opioids (Spanswick & Main, 1989). However several investigators have questioned the reliability of simple visual analog scales for the assessment of chronic pain (eg. Carlsson, 1983).

Comparison of Control Group with MSM Database

From the MPI results it can be seen that the control group reported significantly lower levels of 'Pain Severity', 'Interference' and 'Distracting Responses', and higher levels of 'Activities Away From Home' (they also showed non-significantly higher levels of life control) than the average participant in the MSM pain management programme. This would suggest

that the members of the control group were coping with chronic pain better than the average person who participates in the pain management programme. This finding is supported by the comments of the staff at the Burwood pain management programme, who reported that the control group use in this study was atypical.

Cognitive differences between the Opioid and Control groups

According to Turk & Rudy (1992) there are at least three components to the cognitive aspects of chronic pain. The first construct has been labelled cognitive schema. These are general beliefs, appraisals and expectations about pain and are generally related to feelings of self-efficacy. The Pain Locus of Control Scale has been used to assess this construct. The second construct has been labelled cognitive processes, these are mental processes involved in pain control attempts. Cognitive processes are responsible for the transformation of new information and the modification of internal representations. The Cognitive Error Questionnaire has been used to assess this construct. The third construct is cognitive content. Cognitive content incorporates the specific cognitive content about the individuals situation and their attempts to cope with pain. The Coping Strategies Questionnaire has been used for the assessment of this construct. Although these constructs are interrelated no single scale adequately evaluates the role of cognitions in chronic pain.

Discussion of Pain Locus of Control (PLC) Results

The PLC was included in this study as a means of evaluating how much control the individuals thought they had over their pain. Feelings of

self-efficacy are a central construct in the cognitive-behavioural model of chronic pain (Turk & Rudy, 1992).

The PLC results show that there was a significant difference between the opioid and control groups. The control group reported taking significantly more responsibility for the management of pain and also having more control over their pain than the opioid group. Unfortunately little work has been done on the role of locus of control in influencing chronic pain behaviour. A study by Crisson & Keefe (1988) reports that subjects who rated their ability to control and decrease pain as poor exhibited more psychological distress and reported more depressive, anxiety and obsessive-compulsive symptoms.

Stated in its most general terms, Marlatt & Gordon's (1985) conceptual model of relapse prevention states that an effective treatment results in enhanced perception of control (high self-efficacy) over important events that are likely to reinstate problem behaviour (Wilson, 1992). This implies that the individual's pain locus of control may be a crucial determinant from the perspective of successful pain management treatment and the ability to stabilise the use of opioids, and prevent relapse.

This could mean that locus of control may be a significant determinant of the ability to use opioids appropriately. Spanswick & Main (1989) suggest that people who feel that they bear little responsibility for how pain affects them also tend to have a higher consumption of narcotics. These people do not feel that they can gain any control over their pain and in particular rely on others to help their pain. The concept of learned helplessness is related to an external locus of control where the individual feels helpless to do anything about their pain problems. The lower control scores shown by the

opioid group may be as a result of years of dealing with chronic pain and opioid use or it may reflect a premorbid disposition. Peele (1989) has suggested that 'addicts', as a group, feel more powerless and out of control than other people even before becoming addicted.

Due to the atypical nature of the control group it is difficult to draw generalizable conclusions from these results. The difference in PLC scores may be due to the irregularly high MPI 'Life Control' or low 'Pain Severity' scores recorded by the control group. They may actually have a more internal locus of control because they have less of a pain problem to worry about. Locus of control should prove a fruitful line of inquiry for future research on this topic.

No significant main effect was found for time on either scale although Main & Parker (1989) found the PLC to be sensitive to change on pain management programmes. Their results show that after completing a pain management programme individuals show an increase in Pain Control and Pain Responsibility scores. Main & Parker's findings are consistent with the results that would be expected from a cognitive-behavioural treatment programme as the emphasis of such treatments is on re-establishing the individual's ability to take control of the pain problem rather than the pain problem controlling them. The inability of the currant study to replicate these findings may be due to the small sample size used.

The average scores shown by the control group were higher than the results reported by Main & Parker (1989). It may be that the control group already showed such high scores on these measures that no improvement was possible, while the opioid group failed to improve. If this were the case, these results suggest more work would be required on the opioid group to

enhance their confidence in their ability to cope successfully with chronic pain and stabilise their use of opioids.

Discussion of Cognitive Error Questionnaire (CEQ) Results

After completing a cognitive-behavioural treatment programme it would be reasonable to expect a decrease in cognitive errors as the individual begins to experience more adaptive, positive thoughts and a decrease in depression. This direction of change was found in the Catastrophisation (lbp) and the Selective Abstraction (lbp) subscales where both groups recorded a significant reduction in the tendency to make these cognitive errors.

On the Catastrophisation (general) and the Personalisation (lbp) subscales the opioid group increased their rating of cognitive errors, while the control group, on average, decreased their levels at post-treatment. These two significant interaction effects are interesting as they exemplify a trend that is evident in five out of eight of the subscales, although not to a significant level. From Table 4 it can be seen that the members of the opioid group, on average, actually increased their level of cognitive distortion (even though their BDI scores had decreased) at post treatment while the control group, as would be expected, decreased their levels on all subscales. One possible explanation of this finding is that the realisation by the opioid user that their use of opioids has been inappropriate may have caused increases in the cognitive distortions that are measured by the CEQ. This finding may have major implications for the efficacy of pain management programmes for individuals who present with a complicated history of opioid use.

At the beginning of the treatment programme the members of the opioid group appeared to believe that their use of opioids was appropriate. By the time they had finished the programme they had been taught that their

use of opioids (i.e. uncontrolled doses) was not as good as they had imagined. This may have lead to a degree of cognitive dissonance as the individuals attempted to incorporate this new information into their self-image. The resulting cognitive confusion may have left the individuals in the opioid group less amenable to the types of cognitive change normally achieved with individuals who complete the treatment programme. This would suggest that such individuals need more cognitive therapy than the average participant in the pain management programme in order to modify their cognitive distortions. More research would need to be conducted in order to investigate this speculation.

Another factor contributing to the inability of these individuals to modify their inappropriate cognitions is the fact that many of the members of the opioid group appeared to be cognitively impaired during the programme due to their uncontrolled dosages of opioids. Several members of the opioid group would appear to 'slow down' at certain times of the day and were obviously under the effects of drugs. Opioids, when titrated to the pain, cause minimal cognitive impairment (Zenz, 1991). However, three members of the opioid group were using homebake during the programme and five of the seven participants consistently showed signs of cognitive impairment. Another unknown quantity was the use of marijuana by members of this group. Several members of the staff reported the possible use of this substance by group members during the programme.

The cognitive impairment caused by the inappropriate use of opioids, marijuana or Benzodiazepines can inhibit learning and may be a major factor in the inability of the opioid group to decrease their inappropriate cognitions. In future, if a programme of this nature were to be run, it would be strongly recommended that every effort be made to control the availability of these

substances. Regardless of the causes of these cognitions' resistance to change, it would appear that more intensive cognitive therapy than was used in this programme is necessary to modify the cognitive distortions exhibited by these individuals.

Generally the results of the CEQ were inconclusive with most of the subscales showing no significant main effects. However one interesting distinction is the higher level of cognitive errors evident for the questions that specifically relate to lower back pain (lbp) situations. This probably reflects the respondents' negative feelings towards the areas of their lives where pain is a problem, and shows that the depression they report is related to the impact of chronic pain (Lefebvre, 1981).

A study by Smith Follick, Ahern & Adams (1986) reported that 'Overgeneralisation' was the most common cognitive distortion found in people with chronic pain and can lead to the 'spread of disability' into all facets of the person's life. From the results presented in Table 4 it can be seen that for both the members of the opioid group and the control group they scored their highest levels of cognitive distortion for the 'Overgeneralisation (lbp)' subscale at both pre- and post treatment.

The most surprising finding from this questionnaire was that there were no main effects for group evident on any of the subscales. According to Lefebvre (1981) the opioid group would have been expected to score significantly higher on the CEQ subscales as they had significantly higher levels of depression (as measured by the BDI) than the control group. These higher levels of depression should mean that the opioid group systematically distort the meaning of events so as to consistently construe themselves and their experiences in a negative way (Beck, 1976). One reason for this finding

may be that the 'depression' felt by people with chronic pain is different from the normal concept of depression. Many people with chronic pain have mood disturbances and feel depressed, but in contrast to other depressed people, their mood disturbance is usually one of irritability rather than sadness (Sternbach, 1984).

The lack of distinction between the two groups may be due to the small sample size. Another confounding factor influencing the results obtained is that the CEQ was found by most participants in the pain management programme to be difficult to comprehend. Instructions asking the subject to imagine they were in a given situation were especially confusing because of the strong 'American bias' on the situations. Compounding this problem, those subjects who did not actually have lower back pain were instructed to substitute their own condition where the phrase 'lower back pain' was mentioned. Subjects also complained about the repetitive nature of the questions and the length of time it took to complete. It is strongly suspected that more than one subject skipped through the questionnaire.

Many of the questions that were relevant to the participants had to be read extremely carefully in order to find the 'cognitive distortion' in each situation. In short, this questionnaire was unsuitable, especially when administered in conjunction with a variety of other psychometric instruments. Unfortunately at the moment there are very few measures of cognitive distortion available, as they relate to pain problems.

Discussion of Coping Strategies Questionnaire (CSQ) Results

There is growing evidence that coping strategies may be an important factor determining how people adjust to chronic pain (Rosenstiel & Keefe, 1983). It was therefore thought that any difference in the use of coping

strategies by the control and opioid group may point to areas that are under-utilised by people with a complicated history of opioid use.

The control group reported using the coping strategies of reinterpreting pain sensations, ignoring pain sensations and the use of coping self-statements significantly more often than the opioid group. This may suggest that the opioid group uses opioids instead of these coping strategies. However the control group had a significantly shorter average pain duration than the opioid group. Jensen et al. (1992) suggest that coping strategies are used more often, and possibly more effectively, earlier on in the development of chronic pain and therefore the differences between use of coping strategies, as found by the CSQ, may be due to pain duration rather than the use of opioids.

Another confounding factor is the fact that the control group had a significantly lower average pain severity rating, as measured by the MPI. Jensen et al. (1992) report that people with a lower pain severity may be more likely to find cognitive coping strategies beneficial. This was certainly evident when administering these questionnaires. Many members of the opioid group just laughed at the thought of 'reinterpreting pain sensations' claiming that the pain was 'just there, and nothing could change that'.

There was a significant decrease in the use of 'Coping Self-statements' by both groups although the control group used these coping strategies significantly more than the opioid group. This may be an indication that other activities, such as relaxation, learnt during the programme have replaced these particular coping strategies.

There was a significant decrease in the use of 'Praying/hoping' strategies by the control group after the completion of the programme. Praying/hoping strategies have a 'magical' quality about them. It may be that the positive coping strategies learned during the programme gave the control subjects more concrete and real ways of dealing with pain rather than relying on magical thinking. The fact that the opioid group did not report a significant decrease in the use of these 'magical' strategies may suggest that they did not develop more positive coping strategies.

There was also a significant decrease in the 'Catastrophisation' subscale for the control group which again, may be an indication that other activities, learnt during the programme have replaced this particular negative coping strategy. Turner & Clancy (1986) report that the most important factor in poor coping appears to be the presence of catastrophising. Rosenstiel & Keefe (1983) report that a decrease in catastrophising is correlated with reductions in psychosocial impairment.

The decrease in catastrophising is an especially significant result. Rosenstiel & Keefe (1983) suggest that successful coping is a consequence of avoiding catastrophising. The reduction in the use of negative strategies (such as catastrophising) may be more important to successful coping than increasing the frequency of using positive strategies (Turk & Rudy, 1992). Due to the potential impact of catastrophising on successful coping with chronic pain it is quite surprising that the opioid group did not report a significantly higher level of catastrophising than the control group at pre-treatment.

The control group, while showing similar levels of catastrophising at pre-treatment to the opioid group, significantly decreased their level of

catastrophising at post-treatment while the opioid group did not. This would suggest that some aspect of the programme was useful to help non-opioid users decrease their catastrophisation, but that people with complicated history of opioid use need further work in this area. This speculation is further supported by the fact that the opioid group did not show a decrease in their use of 'Praying/Hoping' strategies. Again this may be a result of the cognitive impairment seen in several members of the opioid group. Future research in this area could look at why this cognitive-behavioural programme did not reduce the opioid group's catastrophisation and how to improve this situation.

Both groups also reported a significant increase in there 'perceived ability to control their pain' and 'perceived ability to effectively decrease their pain levels'. This is an extremely encouraging result and, in conjunction with the increase in MPI 'Life Control' subscale, may suggest that both groups have shown an increase in self-efficacy at the completion of the pain management programme. If the members of the opioid group perceive that they have learned effective alternatives to controlling their pain from their participation in the programme, there is an increased probability that they will be able to stabilise their use of opioids.

There is a possibility that the control group were coping with chronic pain to a greater extent because they were already using appropriate coping strategies. Certainly the control group were using these coping strategies to a greater extent than the members of the opioid group. In a meta-analysis of the utility of cognitive coping strategies, Fernandez & Turk (1989) found that "cognitive strategies, when in comparison to no-treatment or positive expectancy alone, reduce pain significantly" (p. 132). Marlatt & Gordon (1985) advocate replacing maladaptive habit patterns (the inappropriate use of

opioids) with alternative behaviours and skills (in this case coping strategies, relaxation and exercise). Future research could be directed towards seeing what alternative coping strategies can be utilised by people with a complicated history of opioid use and how to decrease their use of negative strategies successfully.

Discussion of PMP Evaluation Questionnaire Results

There were no significant differences between the answers given by the opioid or control groups for any of the pain management programme evaluation questions.

From the results of the questionnaire it would appear that most people thought the programme was useful (question 1) and provided useable skills (question 2). Although most people were not particularly confident about continuing to use these new skills (question 5).

Most people were not so sure about being able to rely less on their medication (question 3) or stabilise their use of medications (question 4). It is not clear why the control group would feel this way to a (non-significantly) greater extent than the opioid group, but the cautious response by the members of the opioid group probably reflects a lack of self-esteem due to a number of years on various medications.

Marlatt & Gordon (1985) have developed a range of maintenance strategies for the treatment of addictive behaviours which are relevant to the prevention of relapse for individuals who have stabilised or withdrawn from opioid medications. The Burwood pain management programme already includes a number of maintenance strategies for the typical participant in the programme, including plans for dealing with flare-ups, assertiveness training

to deal with others and the devising of plans to deal with set-backs. (Nicholas (1992) offers a range of strategies to prevent relapse after completion of a pain management programme). Individuals with a complicated history of opioid use need a set of more specific maintenance strategies to deal with their particular problems.

In order to identify high risk situations for unstable use of opioids a therapist-assisted examination of the subjects 'pain and medication usage diary' may be useful. Self-monitoring can serve both as an assessment procedure and an intervention strategy, since the subjects' awareness of the target behaviour increases as assessment continues. Once the high risk situations of opioid use have been identified it may be useful to engage the subjects in some role playing exercises. For example, the procedure of covert modelling (Kazdin, 1976) may be employed to allow the subjects to imagine engaging in appropriate coping responses when confronted with a high risk situation.

These individuals should also be taught to view a lapse as a mistake and an opportunity to learn about developing more effective coping strategies for the future rather than as a personal failure and the end of the road. In order to help with this way of thinking a relapse contract may be utilised. This involves specifying ahead of time the coping responses that should be employed so that the initial lapse does not become a full-blown relapse. The utilisation of additional refresher courses or booster sessions to prevent relapse should also be considered.

Although each member of the opioid group has been assigned to a staff member as back-up in case they should feel the need to talk to someone about any problems they may be experiencing, these other strategies were not

incorporated into the opioid programme due to the opioid group having a shorter programme than usual. In future, programmes designed to treat this challenging group should incorporate specific relapse strategies to aid in maintaining stability of opioid use. Refer Marlatt & Gordon (1985) for a detailed discussion. Dolce (1987) has suggested that people who fail to display increases in efficacy expectancies for coping may constitute a group of people who are at higher risk for relapse. Future studies on this topic should also provide interventions which specifically target low efficacy beliefs in order to improve treatment outcome.

Most people felt they would definitely recommend the programme to others (question 6) and felt better about themselves since completing the programme. These are encouraging results but it must be remembered that the post-treatment answers were given on the last day of the programme when everyone was feeling positive and the follow-up results were from only seven of the thirteen original participants.

Methodological Issues

Before discussing the implications of these findings it is necessary to consider several confounding factors that may influence any clear interpretation of these results.

Subjects

One of the main drawbacks with this study is the small number of subjects involved and the atypical nature of the control group. These problems are both a function of the 'real world' nature of this research.

The Opioid Group. One of the surprising aspects of this study was the small number of females whose names were submitted for consideration as members of the opioid group. Only three names were collected and none of them were able to attend. From the literature it does not appear that there has been much work done on the effects of gender in identifying a complicated history of opioid use. This is an area that may warrant further investigation. This may point to a possible selection bias in the opioid group to the extent that the people whose names were collected may be more readily suspected of having a complicated history of opioid use. Of the people who attended the opioid programme four of the seven had visible tattoos and health care professionals could naturally be more suspicious of their motives for obtaining opioids.

One possible explanation for the small number of females that were identified may be because many people who are identified as opioid dependent are also diagnosed as having an Anti-social Personality Disorder according to DSM-III-R (American Psychiatric Association, 1987) classification criteria. According to Doug Sellman, a consulting psychiatrist with the alcohol and drug rehabilitation service in Christchurch, 60% of individuals referred to their service who intravenously abuse opioids have diagnosable anti-social personality disorders (Sellman, D., personal communication, June 10, 1992). This disorder is found to occur mainly in males (American Psychiatric Association, 1987) and may partially explain the low incidence of females referred to the Burwood MSM pain management programme. More research may demonstrate whether psychiatric co-morbidity is common in people with both chronic pain and a complicated history of opioid use. It is certainly common in those with opioid dependance (O'Brien, Woody & McLellan, 1984).

Related to this issue, health care professionals may be reluctant to commit their suspicions of opioid problems to the permanent record of one of their patients. Many of the files that were examined for this project made no mention of a complicated history of opioid use and it was only by personal communication with the referring general practitioner that evidence of a problem was established.

Although the opioid group was initially to be randomly selected, the members turned out to be self-selecting by virtue of the fact that many individuals whose names were submitted for consideration could not be contacted. Flor et al. (1992) suggest that there may be considerable differences between those people who accept treatment and those people who decline, for whatever reason. One possible selection bias of the study is that the people who were recruited may be more settled in their living patterns for one reason or another which was reflected in their ability to be contacted.

The Control Group. The control group used in this study did not accurately reflect the normal participant in the Burwood pain management programme. These individuals did gain significant benefit from their participation in the programme, going by the results of the questionnaires that were administered. These individuals may have been relatively well adjusted before entering the programme but they received what is referred to as a 'booster' by participating.

At the start of this study it was intended to compare the opioid group with the control group in order to look at possible differences between use of coping strategies, cognitive distortions, feelings of helplessness and other measures that are thought to influence the individual's ability to cope with chronic pain.

In order to gain more generalizable results from this comparison a control group that was similar to the opioid group on a variety of parameters (sex, age, pain site, pain duration, socio-economic status, etc.) except for the fact that they did not have a complicated history of opioid use would be preferred. From the start, it was known that this would not be possible; however, it was hoped that the control group would be more representative than was the case.

When comparing the results of the opioid and control groups it must, therefore, be taken into consideration that the control group was actually coping with chronic pain better than most people who attend the programme. While this makes for greater differences between the opioid and control groups it does not allow distinctions to be drawn between the opioid group and the 'typical' individual who is referred to the programme for the scales that are not usually administered to participants in the pain management programme.

Pain Management Programme

Another difference between the opioid and control group was the actual pain management programme that the members of each group participated in. The members of the opioid group had a full day less than the control group on the programme due to Easter. Also, due to the Easter break, the post-treatment questionnaires were given to the two groups after they had engaged in different activities. One of the control group members reported that because of the busy schedule of activities on a Friday the answers the group had given to the questionnaires were influenced by an increase in pain due to that morning's activities.

The education sessions that are run as part of the programme are quite informal and encourage contributions and feedback from participants. During these discussions the members of the opioid programme invariably turned the discussion to the subject of opioids during the first half of the programme. This is to be expected due to the nature of this group but it was a subtle difference in the programme that each group participated in. It is interesting to note that this continual reference to opioids had stopped by the end of the programme. It is assumed that this was due to a decrease in focus on the use of opioids by these individuals.

The programme that the control group participated in was different from that which the opioid group attended and also from the 'average' programme. The Burwood pain management programme is designed to meet the particular needs of the individuals that are participating in it. As the members of the control group were coping with chronic pain better than most individuals that attend the programme, there was less emphasis on decreasing levels of distress and more emphasis on such aspects as vocational guidance.

Missing Values

A further complication of this study was the high levels of non-compliance shown by both the control and opioid groups when it came to filling out these questionnaires. Although every attempt was made to get all subjects to answer all the questions this was unsuccessful.

During all the questionnaires subject #11 refused to answer any questions that were 'objectionable'. For example the Coping Strategies Questionnaire contained a number of items dealing with the individuals' use of 'Faith in God' as a coping strategy, this was thought to be "none of my

business". Subject #11 subsequently failed to attend the follow-up session after several arguments with staff members during the programme.

Several subjects (including subject #11) refused to answer questions regarding the responses of 'significant others' to their pain behaviours from the Multidimensional Pain Inventory, claiming they had no significant others to report on. Only subject #3 was consistent in this respect over all three testing sessions. On the last day of the pain management programme Subject #6 left early claiming that the completed Cognitive Error Questionnaire would be dropped in to Burwood the following week. As this subject has not been heard from since, the follow-up results for this subject are also unavailable.

At the 2 month follow-up subject #12 also failed to turn up and subject #5 refused point blank to fill in any questionnaires. Of those who did attend the two follow-up sessions four out of the nine refused outright to complete the Cognitive Error Questionnaire (two from the opioid group and two from the control group). While two of the nine failed to complete the 'Pain Management Programme Evaluation Form'.

Flor, Fydrich & Turk (1992), in a meta-analysis of the efficacy of pain clinics found that there was substantial attrition of subjects especially at long term follow-up, with some studies reporting "as many as 87% did not complete the entire study" (p. 227). Reports such as this put these drop-out rates in perspective. Before this study it was anticipated that members of the opioid group may drop-out or not be available at follow-up, however it was more surprising that two members of the control group failed to attend the follow-up session.

Psychometric Instruments

The psychometric instruments used in this study were chosen for two purposes. First, in an attempt to see if a programme of this type could help individuals with a complicated history of opioid use. The scales are meant to assess empirically if the individuals actually did 'improve'. Secondly, the scales used were chosen so as to investigate specific factors that it was thought may differ between individuals that have a problem with opioids and those that do not.

Although there has been a rapid expansion of theoretical models and clinical interventions the *assessment* of pain and people with pain has lagged behind (Turk & Rudy, 1986). The psychometric instruments used in this study purport to measure unique cognitive constructs but more work is needed to establish the independence of these instruments and the influence of other confounding factors, such as mood states, on these self-report measures (Turk & Rudy, 1992). New assessment techniques that are theoretically based on the increasing amount of research into this area need to be developed.

The psychometric instruments that were used in this study could not be administered on a regular basis to all participants in the pain management programme as they are also too time-consuming. As mentioned earlier, a scale needs to be developed that encompasses all the variables that the present scales measure. Guidelines for the development of such a scale have been suggested by Turk & Rudy (1986).

The high number of questionnaires administered relative to the small number of subjects increases the probability of making Type 1 errors (Keppel, 1982). However, as this study was the first of its kind it was felt that such a

large number of measures was justified in order to explore which measures were appropriate.

Another confounding influence inherent in this type of study is the fact that the results reported for each test are influenced by how the individual felt at the moment the test was administered. For example, the difference in baseline (pre-treatment) measures and post-treatment measures could simply reflect the natural fluctuations in a chronic condition rather than the effects of treatment. The 'Pain and medication usage diary' was to be used as a means of controlling for this problem and future studies should include suitable long-term measures such as performance over time of certain behaviours.

General Conclusion

One of the more surprising findings of this study is how similar the opioid group was to the average participant in the pain management programme (as represented by the database) on the MPI subscales. One tentative conclusion that may be drawn from this discovery is that the MPI does not measure the variables that are contributing to a complicated history of opioid use. The one major difference was the level of depression evident in the opioid group, although the members of the opioid group were not significantly more depressed than the data base comparison. However, not everyone who is depressed has a problem with opioids so it would appear that other factors are involved. From the results of the questionnaires that were used it would appear that there was no major differences in the level of cognitive distortion shown by the opioid and control groups, although the opioid group would appear to be less amenable to change. This result was

also found with the negative coping strategies, such as catastrophisation, on the CSQ.

We emerge with a picture of a group of people that have no medical or cognitive reasons, as assessed by our measures, to be any different from the average participant in the pain management programme, and yet they are presenting with serious problems with their use of opioid medications. Although the opioid group members were similar at pre-treatment to the average participant they showed more resistance to change on several measures (for example, the CSQ 'Catastrophisation' subscale) than the control group members. Future research into the subject of who is likely to develop a complicated history of opioid use will need to draw from the field of addiction studies.

From the social learning perspective addictive behaviours are not caused by an underlying physiological disorder or the chemical action of the substance. Rather the determinants of addiction lie in situational and environmental antecedents, beliefs and expectations and the individual's family history and prior learning experiences with the substance (Marlatt, 1985).

Factors that have not been considered here, but that are probably involved in the development of a problem with opioids, include the attitude towards using opioids of the individual concerned, their peers, family and relevant health care professionals. The lengths to which the individual is personally prepared to go to achieve pain relief is also a consideration. Peele (1977) suggests that people's *values* are crucial in determining who becomes and remains addicted and who chooses not to do so. That is, people make a

choice (although not necessarily at a conscious level) of what ends they are willing to go to in order to gain relief from pain.

The presence of psychopathology would also have an impact on the development of a complicated history of opioid use. O'Brien, Woody & McLellan (1984) suggest, from a review of the literature,that 74% of opioid dependant subjects (without chronic pain) at treatment meet DSM III criteria for a lifetime diagnosis of an affective disorder and 40-50% have Antisocial Personality Disorder. O'Brien et al. further suggest that such individuals generally have poor treatment results from rehabilitation programmes, unless long-term therapy is provided.

Research should also be directed towards discovering the consequences for the individual of inappropriately using opioids. This will lead to a better understanding of the reinforcing factors that lead to increased use and the negative consequences that may serve to inhibit the behaviour. If controlled use of opioids is to be a viable treatment option for individuals with a complicated history of opioid use, research will also need to be conducted to investigate which individuals are capable of maintaining stability. Although there are many differences between the controlled use of opioids and the controlled use of alcohol, the predictors of controlled drinking may provide a starting point for research into this area. Heather & Robinson (1981) in a review on this issue suggest that the presence of social support following treatment, the clients confidence about their ability to stabilise, a low severity of drinking symptoms and shorter history of problems contribute to controlled drinking. In a more recent review, Rosenberg (1993) has included the psychological and social stability of the individual as good predictors of controlled drinking.

Another factor that may be involved in the development of a complicated history of opioid use is the level of perceived disability experienced by the individual. Main & Parker (1989) have reported that the person who displays problems with opioids is more likely to feel more disabled than the average participant in a pain management programme. The Sickness Impact Profile (Bergner, Bobbitt, Carter & Gilson, 1981) was going to be included in the battery of measures given to each subject but it was felt that enough questionnaires were already being used. The level of perceived disability may be an important area for future research. A study by Smith Follick, Ahern & Adams (1986) reported that cognitive distortion (as measured by the CEQ) is closely related to disability (as measured by the SIP).

The concept of perceived disability is related to catastrophisation. While both groups did show significantly lower levels of catastrophising distortions on the CEQ (lbp) subscale at post-treatment the results of the other two catastrophising subscales are interesting. While the opioid and control groups showed similar scores of catastrophising on the CSQ and CEQ (gen.) catastrophising subscales at pre-treatment the control group significantly decreased their scores at post-treatment. The opioid group did not show any significant decrease on the CSQ while they actually showed a (non-significant) increase in cognitive distortions on the CEQ (gen.) subscale at post-treatment.

The difference between these two scales is that the CEQ subscales look at the internal cognitive distortions of the individual, while the CSQ looks at the actual results of these distortions, that is the coping strategies that are employed. It would appear that the inability to decrease catastrophising as a coping strategy may be due more to general catastrophising in the individuals life, rather than catastrophising specifically related to the pain problem. This

would suggest that the individuals who show a complicated history of opioid use are catastrophising about their lives in general and therefore more general cognitive therapy would be necessary to treat these individuals.

The most important factor in poor coping with pain appears to be the presence of catastrophising (Heyneman, Fremouw, Gano, Kirkland & Heiden, 1990; Turk & Rudy, 1992). While it is surprising that both groups showed similar levels of catastrophising at pre-treatment, the fact that the opioid group did not show any reduction in catastrophising would tend to suggest that their cognitions are more resistant to change. Future research should be directed towards ways to enhance decreases in catastrophisation in this challenging population.

Although the results of the PLC are inconclusive, due to the abnormally high levels of MPI "Life Control' exhibited by the control group, this is still an area which deserves greater attention in future studies. The fact that the opioid group, on average, showed low levels of confidence in their ability to stabilise their use of medications, as reported by their PMP Evaluation Questionnaire results, means that more attention will need to be paid to developing a sense of self-efficacy and foster the idea that they are in control of their opioid use. Several studies have highlighted the crucial role that perceived self-efficacy plays in controlling pain (Bandura et al., 1987). Kores, Murphy, Rosenthal, Elias & North (1990) report that self-efficacy beliefs are associated with level of functioning and response to treatment in a pain management programme, while self-efficacy is also an important factor in self-regulation of addictive habits (e.g. smoking, DiClimente (1981)).

Dolce, Crocker, Moletteire & Doleys (1986) found higher levels of self-efficacy expectations to be related to greater reductions in the need for pain

medication. Although no actual measures of self-efficacy were used in this study the 'Life Control' subscale of the MPI approximates self-efficacy in the context of pain (Fernandez, E., personal communication, August 10, 1992). Our results indicate that, although the opioid group showed slightly lower scores on this subscale than the data-base comparison at pre-treatment, by post-treatment both groups had significantly increased their scores to the same level. This result is confirmed by the CSQ results. Both groups also reported a significant increase in there 'perceived ability to control their pain' and 'perceived ability to effectively decrease their pain levels'. This increase in self-efficacy does not seem to have carried over to the use of opioids. Future research in this area should develop a specific self-efficacy scale to measure opioid use and pain control [see Bandura (1982) for the single response format recommended for assessing self-efficacy].

Despite the atypical nature of the control group important preliminary conclusions can still be drawn. The control group was atypical and therefore difficult to compare to the opioid group, while not all members of the opioid group appeared to make substantive gains in functioning. However the study itself was an attempt to positively address the problems faced by individuals who present with chronic pain and a complicated history of opioid use. These people can not be expected to increase their feelings of self-worth, which is necessary to break the 'addiction' cycle, when they are treated so negatively by the people that are supposed to help them. The members of the opioid group reported that the general staff at Burwood Hospital acted in a hostile manner towards them when they went for meals in the staff cafeteria. This reflects the influence that perjorative labels can have on the way other people interact with individuals with a complicated history of opioid use.

It is not really appropriate to refer to 'the opioid group' as if its members are a homogeneous sub-group of pain sufferers, which has been referred to as the 'pain-patient uniformity myth' (Turk, 1990). Each member of the group was an individual and some people gained a lot from their participation while others did not. The literature suggests that people with a complicated history of opioid use should be withdrawn from their medication before treatment starts. The literature is not so clear on what to do if the individual does not wish to discontinue opioid medication. All the members of the opioid group expressed a willingness to stabilise their use of opioids, as part of their consent form. [Although they were hardly likely to say otherwise!] It would be naive to suggest that all such individuals do wish to do something about their complicated history of opioid use. This study has attempted to show that certain individuals with a complicated history of opioid use and a genuine interest in helping themselves, may be maintained on opioids, contrary to the literature.

Several members of the opioid group did achieve a significant improvement in functioning. A study by Tulkin et al. (1990) suggests that successful completion of a pain management programme leads to a decrease in the individuals utilisation of medical services with a resultant decrease in costs to the health care system. The Burwood MSM pain management programme estimates that it only needs one 'success' per programme to cover the costs of running the programme. This target was achieved by the members of the opioid group. Obviously it is impossible to say this individual 'passed' and that individual 'failed' especially as their are no universally accepted criteria for evaluating the outcome of pain management programmes (Turner & Ramano, 1984). But, as indicated by the clinical observations, three individuals gained significant benefit from attending the programme. The enduring memory of this programme for the coordinator

of the Burwood MSM pain management programme was that at the beginning of the programme, all the members of the opioid group could talk about was opioids. By the end of the programme these individuals had to be reminded about their use of these analgesics.

One interesting result from this study is that two members of the opioid group who had their medication increased are no longer displaying signs of inappropriate opioid use. This is consistent with a report by Zenz (1991) who notes "We have .... treated some patients who were addicted to medical opioids caused by an 'as required'-regimen. They lost all their addictive behaviour as soon as they were treated in the right way - by an effective dose at regular time intervals" (p. S101). Berntzen & Gotestam (1987) report that a fixed-interval analgesic schedule was found to be more effective than an on-demand analgesic schedule in reducing subjective pain. A significant component of the drug education component of the opioid group's programme was explaining the analgesic benefits of time-contingent analgesic regimes.

An alternative explanation of this finding is that, as mentioned in the introduction, the iatrogenic syndrome of 'opioid pseudoaddiction' is occurring, that is, people are perceived as displaying drug seeking behaviour as a result of inadequate analgesia. In the case of these two individuals a definite history of intravenous opioid use was established but this consideration must be recognised in the management of individuals with a complicated history of opioid use.

Although the 'Pain and medication usage dairies' were not completed satisfactorily some brief comments about the results that were obtained are in order. Most members of the opioid group were taking their opioids on a

p.r.n. ('as required') basis. This can lead to problems of increasing doses and 'mini-withdrawals' leading to even more pain (refer Introduction). The goal of the programme was time-contingent use of analgesia, which represents 'stability'. It would have been interesting to see if there were any differences between those that had achieved stability in their use of opioids and those who had not. The sample used in this study was unfortunately too small to attempt to answer these interesting questions. However, they should prove to be fruitful lines of inquiry for future research.

A therapist-assisted examination of the individual's diary may also have lead to the identification of high-risk situations of inappropriate opioid use. This is a major component of relapse prevention and may lead to a greater understanding of the causes and problems associated with these individuals' use of opioids.

All members of the opioid group reported believing that their medication was inadequate to control their pain. In conjunction with high levels of personal distress, these beliefs appear to readily lead to behaviour such as self-medication with opioids used intravenously. Although these factors 'sow the seeds' of potential abuse it is the personal lengths an individual is prepared to go to in order to gain pain relief that is the important factor in predicting the development of a complicated history of opioid use. The individuals *values* are crucial in deciding the extent to which they will engage in any behaviour (Peele, 1989). Both the individuals who discontinued self-medicating expressed a desire to stabilise their medication due to the fact that their family relationships were suffering. This highlights the fact that the individual must have a genuine interest in helping themselves before any such treatment programme can be successful (Marlatt, 1985).

Addiction, when not complicated by psychological factors, is extremely rare in people with chronic pain who are prescribed opioids (Melzack, 1988). As discussed previously, psychological and behavioural symptoms of chronic pain are not amenable to opioid medications. This suggests that before an individual is placed on opioid therapy a thorough multi-disciplinary assessment by a specialised team should be conducted. Any psychological complications can then be dealt with before a co-morbity develops (refer Schug, Merry, & Ackland (1991) for proposed guidelines of opioid maintenance therapy in New Zealand). In particular, people with Antisocial Personality Disorder are unamenable to Cognitive-Behavioural treatment (Sellman, 1992). Any future guidelines for the use of opioid therapy should consider this point carefully. However a note of caution is needed in the diagnosis of psychological or psychiatric contributions to chronic pain.

> *"After it is believed that all appropriate (and minimally invasive) investigations have been completed, a patient should not be diagnosed as having pain that is either caused by or made worse by psychologic illness unless positive evidence of that illness, acquired by psychiatric or psychologic evaluation, has been demonstrated and a sufficient cause for it has been found'* (Merskey, 1990, p. 326).

The presence of a psychiatric disorder per se should not be seen as a contraindication of opioid maintenance therapy. Several studies have shown no evidence of drug seeking behaviour by such people. For example France et al. (1984) report that of 16 people they kept on long-term opioid therapy, six had dysthymic disorder and six had a major depressive disorder according to DSM III criteria. There was no indication of drug-seeking

behaviour in any of these individuals. This general finding is supported by Kennedy & Crowley (1984) and Bouckoms et al. (1992).

Concluding Comments

Adequate evaluation and management strategies should lead to a reduction in the number of individuals showing co-morbid opioid dependency and chronic pain. For those individuals that do show these signs, a new management strategy has been suggested based on cognitive-behavioural theories for the treatment of chronic pain and addictions. The fact that, on average, all members of the opioid group showed significant decreases in depression scores (except Subject 1), higher levels of life control, lower levels of interference and affective distress and increases in outdoor work suggest that nearly all the participants gained some benefit from attending the programme. The incorporation of relapse prevention techniques and an increased focus on decreasing catastrophisation and increasing self-efficacy may lead to the provision of positive management strategies for this challenging population. This in turn would suggest that the mandatory discontinuation of opioids, as suggested by the literature, may not be absolute.

The findings of this study that these individuals may be more resistant to change on such cognitive variables as maladaptive coping responses and cognitive distortions would suggest that more intensive treatment may be necessary. The implications of these results are that extra resources may be needed to treat complex cases such as these. This in turn implies that the political will must be there to seriously address these issues.

From the results of the comparison of the opioid group with the MSM database it can be seen that in most respects the two groups reported similar scores at pre-treatment and similar improvements in scores at post-treatment on the MPI and BDI. Appropriate initial goals for individuals with this history and chronic pain appear to include stability of use and a change from a p.r.n. basis to time contingent use. The fact that demonstrable change in this previously considered untreatable group could be shown is indicative that further study should be carried out. It is hoped that refinement in methods for treating co-morbid chronic pain and opioid dependency will ensue.

References

American Psychiatric Association. (1987). Diagnostic and Statistical Manual of Mental Disorders (3rd ed., revised). Washington, D.C: Author.

Bandura, A., O'Leary, A., Taylor, C.B., Gauthier, J., & Gossard, D. (1987). Perceived self-efficacy and pain control: Opioid and nonopioid mechanisms. Journal of Personality and Social Psychology, 53 (3), 563-571.

Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147.

Bandura, A. (1984). Recycling misconceptions of perceived self-efficacy. Cognitive Therapy and Research, 8 (3), 231-255.

Beck, A.T. (1976). Cognitive therapy and the emotional disorders. New York: International University Press.

Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G. (1979). Cognitive Therapy of Depression. New York: Guilford.

Beck, A.T., Steer, R.A., & Garbin, M.G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clinical Psychology Review, 8 (1), 77-100.

Bergner, M., Bobbitt, R.A., Carter, W.B., & Gilson, B.S. (1981). The Sickness Impact Profile: Validation of a health status measure. Medical Care,

19, 787-805.

Berntzen, D., & Gotestam, K. G. (1987). Effects of on-demand versus fixed-interval schedules in the treatment of chronic pain with analgesic compounds. Journal of Consulting and Clinical Psychology, 55 (2), 213-217.

Black, R.G. (1975). The chronic pain syndrome. Surgical Clinics of North America, 55, 999-1011.

Bonica, J.J. (1980). Cancer pain. In J.J. Bonica (Ed.) Pain. (pp335-362) New York: Raven Press.

Bonica, J.J. (1990a). General considerations of chronic pain. In J.J. Bonica (Ed.), The management of pain (2nd ed.). (pp.180-196) Philadelphia: Lea & Febiger.

Bonica, J.J. (1990b). Anatomic and physiologic basis of nociception and pain. In J.J. Bonica (Ed.), The management of pain (2nd ed.). (pp. 28-94) Philadelphia: Lea & Febiger.

Bonica, J.J. (1990c). History of pain concepts and therapies. In J.J. Bonica (Ed.), The management of pain (2nd ed.). (pp. 2-17) Philadelphia: Lea & Febiger.

Bonica, J.J. (1990d). Multidisciplinary/interdisciplinary pain programs. In J.J. Bonica (Ed.), The management of pain (2nd ed.). (pp. 197-208) Philadelphia: Lea & Febiger.

Bouckoms, A.J., Masand, P., Murray, G.B., Cassem, E.H., Stern, T.A., & Tesar, G.E. (1992). Chronic nonmalignant pain treated with long-term oral narcotic analgesics. Annals of Clinical Psychiatry, 4, 185-192.

Brickman, V.C., Rabinowitz, J., Karuza, D., Coates, E., Cohn, E., & Kidder, K. (1982). Models of helping and coping. American Psychologist, 37, 368-384.

Burry, H.C., & Gravis, V. (1988). Compensated back injury in New Zealand. New Zealand Medical Journal, 542-544.

Butler, S.H., & Murphy, T.M. (1989). Use and abuse of drugs in chronic noncancerous pain states. In Loeser, J.D., & Egan, K.J. (Eds.), Managing the chronic pain patient. (pp129-141). New York: Raven Press.

Carlsson, A.M. (1983). Assessment of chronic pain. 1. Aspects of the reliability and validity of the visual analog scale. Pain, 16, 87-91.

Collin, E., Poulain, R., Gauvain-Piquard, A., Petit, G., & Pichard-Leandri, E. (1993). Is disease progression the major factor in morphine 'tolerance' in cancer pain treatment? Pain, 55, 319-326.

Crisson, J.E., & Keefe, F.J. (1988). The relationship of locus of control to pain coping strategies and psychological distress in chronic pain patients. Pain, 35, 147-154.

Crook, J., & Tunks, E. (1985). Defining the "chronic pain syndrome": An epidemiological method. In H.L. Fields, R. Dubner, & F. Cervero (Eds.), Advances in Pain Research and Therapy. Vol 9. (pp871-877). New York: Raven Press.

Davies, D.L. (1962). Normal drinking in recovered alcohol addicts. Quarterly Journal of Studies on Alcohol, 23, 94-104.

DiClemente, C.C. (1981). Self-efficacy and smoking cessation maintenance: A preliminary report. Cognitive Therapy and Research, 5, 175-187.

Dolce, J.J. (1987). Self-efficacy and disability beliefs in behavioural treatment of pain. Behaviour Research and Therapy, 25 (4), 289-299.

Dolce, J.J., Crocker, M.F., & Doleys, D.M. (1986). Prediction of outcome ` among chronic pain patients. Behaviour Research and Therapy, 24, 313-319.

Dolce, J.J., Crocker, M.F., Moletteire, C., & Doleys, D.M. (1986). Exercise quotas, anticipatory concern and self-efficacy expectancies in chronic pain: A preliminary report. Pain, 24, 365-372.

Donaldson, G.W. (1993). Statistical power in clinical pain research. APS Bulletin, 11-13.

Dunlop, R. (1992, May). The use of opioids in pain of malignant origin. Paper presented at the consensus conference on the use of opioids in chronic pain of nonmalignant origin, Auckland, New Zealand.

Fernandez, E., & Turk, D.C. (1989). The utility of cognitive coping strategies for altering pain perception: A meta-analysis. Pain, 38, 123-135.

Finlayson, R.E., Maruta, T., Morse, R.M., & Martin, M.A. (1986). Substance dependence and chronic pain: Experience with treatment and follow-up results. Pain, 26, 175-180.

Flor, H., Fydrich, T., & Turk, D.C. (1992). Efficacy of multi-disciplinary pain treatment centres: A meta-analytic review. Pain, 49, 221-230.

Flor, H., & Turk, D.C. (1988). Chronic back pain and rheumatoid arthritis: Predicting pain and disability from cognitive variables. Journal of Behavioural Medicine, 11, 251-265.

Fordyce, W.E. (1976). Behavioural methods in chronic pain and illness. St Louis: C.V. Mosby.

Fordyce, W.E., Roberts, A.H., & Sternbach, R.A. (1985). The behavioural management of chronic pain: A response to critics. Pain, 22, 113-125.

Friedman, D.P. (1990). Perspectives on the medical use of drugs of abuse. Journal of Pain and Symptom Management, 5 (1), S2-S5.

France, R.D., Urban, B.J., & Keefe, F.J. (1984). Long-term use of narcotic analgesics in chronic pain. Social Science Medicine, 19; 1379-1382.

Glynn, C.J., & Mather, L.E. (1982). Clinical pharmacokenetics applied to patients with intractable pain: Studies with pethidine. Pain, 13, 237-246.

Halpern, L.M., & Robinson, J. (1986). Prescribing practices for pain in drug dependence: A lesson in ignorance. In B. Stimmel (Ed.), Controversies in Alcoholism and Substance Abuse. (pp 135-162). New York: Howarth Press

Hanson, R.W., & Gerber, K.E. (1990). Coping with chronic pain: A guide to patient self-management. New York: Guilford Press.

Heather, N., & Robinson, I. (1981). Controlled drinking. London: Methuen.

Holzman, A.D., & Turk, D.C. (1986) Pain management: A handbook of psychological treatment approaches. New York: Pergamon Press.

James, F.R., Large, R.G., Bushnell, J.A., & Wells, J.E. (1991). Epidemiology of pain in New Zealand. Pain, 44, 279-283.

Jensen, M.P., Turner, J.A., & Romano, J.M. (1991). Self-efficacy and outcome expectancies: Relationship to chronic pain coping strategies and adjustment. Pain, 44, 263-269.

Jensen, M.P., Turner, J.A., & Romano, J.M. (1992). Chronic pain coping measures: individual vs. composite scores. Pain, 51, 273-280.

Kazdin, A.E. (1976). Effects of covert modelling, multiple models and model reinforcement on assertive behaviours. Behaviour Therapy, 7, 211-222.

Kennedy, J.A., & Crowley, T.J. (1990). Chronic pain and substance abuse: A pilot study of opioid maintenance. Journal of Substance Abuse Treatment, 7, 233-238.

Keppel, G. (1982). Design and analysis: A researchers handbook (2nd ed.). London: Prentice-Hall, Inc.

Kerns, R.D., Turk, D.C., & Rudy, T.E. (1985). The West Haven-Yale multidimensional pain inventory (WHYMPI). Pain, 23, 345-356.

Kleinke, C.L. (1992). How chronic pain patients cope with pain: Relation to treatment outcome in a multidisciplinary pain clinic. Cognitive Therapy and Research, 16 (6), 669-685.

Kores, R.C., Murphy, W.D., Rosenthal, T.L., Elias, D.B., & North, W.C. (1990). Predicting outcome of chronic pain treatment via a modified self-efficacy scale. Behaviour Research and Therapy, 28 (2), 165-169.

Lawson, K., Reeser, K.A., Keefe, F.J., & Turner, J.A. (1990). Dimensions of pain-related cognitive coping: Cross validation of the factor structure of the Coping Strategy Questionnaire. Pain, 43, 195-204.

Lefebvre, M.F. (1981). Cognitive distortion and cognitive errors in depressed psychiatric and low back pain patients. Journal of Consulting and Clinical Psychology, 49 (4) 517-525.

Loeser, J.D. (1980). Low back pain. In J.J. Bonica (Ed.), Pain (pp. 363-377). New York: Raven Press.

Loeser, J.D., & Egan, K.J. (Eds.), (1989). Managing the chronic pain patient: Theory and practice at the University of Washington Multi-disciplinary Pain Centre. New York: Raven Press

Main, C.J., & Parker, H. (1989). The evaluation and outcome of pain management programmes for chronic low back pain. In M.O. Roland & J.R. Jenner (Eds.), Back Pain: New approaches to rehabilitation and education. (pp. 129-155). Manchester: Manchester University Press.

Main, C.J., & Waddell, G. (1991). A comparison of cognitive measures in low back pain: Statistical structure and clinical validity at initial assessment. Pain, 46, 287-298.

Main, C.J., Wood, P.L.R., Spanswick, C.C., Roberts, A.C., & Robson, J. The Pain Locus of Control Questionnaire. Manuscript submitted for publication

Marlatt, G.A., Baer, J.S., Donovan, D.M., & Kivlahan, D.R. (1988). Addictive behaviours: Etiology and treatment. Annual Review of Psychology, 39, 223-253.

Marlatt, G.A. (1985a). Relapse prevention: Theoretical rationale and overview of the model. In G. A. Marlatt & J.R. Gordon (eds.),

Relapse prevention: Maintenance strategies in the treatment of addictive behaviours (pp3-70). New York: Guilford Press.

Marlatt, G.A. (1985b). Lifestyle Modification. In G. A. Marlatt & J.R. Gordon (eds.), Relapse prevention: Maintenance strategies in the treatment of addictive behaviours (pp280-349). New York: Guilford Press.

Marlatt, G.A., & Gordon, J.R. (1985). , Relapse prevention: Maintenance strategies in the treatment of addictive behaviours (pp3-70). New York: Guilford Press.

Marlatt, G.A., Larimer, M.E., Baer, J.S., & Quigley, L.A. (1993). Harm reduction for alcohol problems: Moving beyond the controlled drinking controversy. Behaviour Therapy, 24, 461-504.

Maruta, T., Swanson, D.W., & Finlayson, R.E. (1979). Drug abuse and dependence in patients with chronic pain. Mayo Clinic Proceedings, 54, 241-244.

McQuay, H.J. (1989). Opioids in chronic pain. British Journal of Anaesthesia, 63, 213-216.

Melzack, R., & Wall, P.D. (1988). The challenge of pain. London: Penguin.

Merry, A.F., Schug, S.A., Richards, E.G., & Large, R.G. (1991). Opioids in the treatment of chronic pain of nonmalignant origin. New Zealand Medical Journal, 104, 520-521.

Merskey, H. (1990). Chronic pain and psychiatric illness. In J.J. Bonica (Ed.), The management of pain. (pp. 320-327). Philadelphia: Lea & Febiger.

Millar, W.R., Leckman, A.L., Delaney, H.D., & Tinkcom, M. (1992). Long term follow-up of behavioural self-control training. Journal of Studies on Alcohol, 53, 249-261.

Morgan, (1986). American Opiophobia: Customary underutilization of opioid analgesics. In B. Stimmel (Ed.), Controversies in Alcoholism and Substance Abuse. (pp 163-172). New York: Howarth Press.

Newman, R.I., Seres, J.L., Yospe, L.P., & Garlington, B. (1978). Multi-disciplinary treatment of chronic pain: long-term follow-up of low-back pain patients. Pain, 4, 283-292.

Nicholas, M.K. (1992). Chronic pain. In P.H. Wilson (Ed.), Principles and practice of relapse prevention. (pp. 255-289). New York: Guilford Press.

O'Brien, C.P., Woody, G.E., & McLellan, A.T. (1984). Psychiatric disorders in opioid-dependant patients. Journal of Clinical Psychiatry, 45 (2), 9-14.

Peele, S. (1977). Redefining addiction. 1. Making addiction a scientifically and socially useful concept. International Journal of Health Services, 7, (1) 103-124.

Peele, S. (1985). The meaning of addiction: Compulsive experience and its interpretation. Lexington: Lexington Press.

Peele, S. (1989). Diseasing of America: Addiction treatment out of control. Massachusetts: Lexington.

Pelz, M., & Merskey, H.A. (1983). A description of the psychological effects of chronic painful lesions. Pain, 16, 293-301.

Poole, J.C., & Jahr, J.S. (1992). (abstract) Opiate receptors: A review of analgesic and pharmacological side effects. Journal of Louisiana State Medical Society, 144 (3), 106-108.

Portenoy, R.K., & Foley, K.M. (1986). Chronic use of opioid analgesics in nonmalignant pain: Report of 38 cases. Pain, 25, 171-186.

Portenoy, R.K. (1989). Opioid therapy in the management of chronic back pain. In C.D. Tollison (Ed.), Interdisciplinary rehabilitation of chronic back pain (pp137-157) Baltimore: Williams & Wilkens.

Portenoy, R.K. (1990). Chronic opioid therapy in nonmalignant pain. Journal of Pain and Symptom Management, 5 (1), S46-S61.

Ready, L.B. (1990). Patient-controlled analgesia: Does it provide more than comfort? Canadian Journal of Anaesthesia, 37, 719-721.

Rosenberg, H. (1993). Prediction of controlled drinking by alcoholics and problem drinkers. Psychological Bulletin, 113 (1), 129-139.

Rosenstiel, A.K., & Keefe, F.J. (1983). The use of coping strategies in chronic low back pain patients: Relationship to patient characteristics and current adjustment. Pain, 17, 33-44.

Roy, R. (1987). Social work management of chronic pain. In G.D. Burrows, D. Elton, & G.V. Stanley (Eds.), Handbook of chronic pain management. (pp 217-225) Amsterdam: Elsevier.

Schug, S.A., Merry, A.F., & Acland, R.H. (1991). Treatment principles for the use of opioids in pain of nonmalignant origin. Drugs, 42 (2), 228-239.

Schug, S. (1992, May). The use of opioids in pain of nonmalignant origin. Paper presented at the consensus conference on the use of opioids in chronic pain of nonmalignant origin. Auckland, New Zealand.

Schug, S.A., Zech, D., & Grond, S. (1992). Adverse effects of systemic opioid analgesics. Drug Safety, 7 (3), 200-213.

Sellman, D. (1992, May). The Substance abuse perspective. Paper presented at the consensus conference on the use of opioids in chronic pain of nonmalignant origin. Auckland, New Zealand.

Sizemore, W.A. (1989). Behavioural aspects of managing medications for chronic pain not caused by cancer. In Loeser, J.D., & Egan, K.J. (Eds.), Managing the chronic pain patient. (pp117-128) New York: Raven Press.

Smith, T.W., Follick, M.J., Ahern, D.K., & Adams, A. (1986). Cognitive distortion and disability in chronic low back pain. Cognitive Therapy and Research, 10 (2), 201-210.

Sorge, J., Steffmann, B., Lehmkuhl, C., & Pichlmayer, I. (1991). Opioids in "non-malignant" pain: Results of long-term treatment in patients with rheumatic disease. Der Schmerz, 5, 60-66.

Spanswick, C.C., & Main, C.J. (1989). The role of the anaesthetist in the management of chronic low back pain. In M.O. Roland & J.R. Jenner (Eds.), Back Pain: New approaches to rehabilitation and education. (pp. 108-126). Manchester University Press: Manchester.

Stark, E. (1985). Breaking the pain habit. Psychology Today, pp. 31-36.

Sternbach, R.A. (1982). Acute versus chronic pain. In P.D. Wall & R. Melzack (Eds.), Textbook of pain. (pp.173-177). London: Churchill Livingston.

Swanson, D.W., Swenson, W.M., Maruta, T., & McPhee, M.C. (1976). Programme for managing chronic pain. 1. Programme description and characteristics of patients. Mayo Clinic Proceedings, 51, 401-408.

Syme, G., & Wong, P. (1989). The drug seeker: Where do health professionals stand? New Ethicals, 26 (2), 35-47.

Tennant, F.S., & Uelman, G.F. (1983). Narcotic maintenance for chronic pain: Medical and legal guidelines. Journal of Postgraduate Medicine, 73, 81-94.

Tulkin, S.R., Frank, J.W., Bernstein, A., Nayak, R., Aubel, B., & Lehn, M. (1990). Changes in medical utilisation after treatment in a pain

management clinic. Paper presented at the World Pain Congress. Adelaide.

Turk, D.C. (1990). Customising treatment for chronic pain patients: Who, what and why? Clinical Journal of Pain, 6, 255-270.

Turk, D.C., & Brody, M.C. (1992). What position do APS's physician members take on chronic opioid therapy? APS Bulletin, 2 (2), 1-5.

Turk, D.C., & Genest, M. (1979) Regulation of pain: The application of cognitive and behavioural techniques for prevention and remediation. In P. Kendall & S. Hollon (Eds.), Cognitive-Behavioural Intervention: Theory, Research and Procedures (pp. 287-301) New York: Academic Press.

Turk, D.C., Meichenbaum, D., & Genest, M. (1983). Pain and behavioural medicine: A cognitive-behavioural perspective. New York: Guilford Press.

Turk, D.C., & Rudy, T.E. (1986). Assessment of cognitive factors in chronic pain: A worthwhile enterprise? Journal of Consulting and Clinical Psychology, 54 (6), 760-768.

Turk, D.C., & Rudy, T.E. (1990). Neglected factors in chronic pain treatment outcome studies- referral patterns, failure to enter treatment, and attrition. Pain, 43, 7-25.

Turk, D.C., & Rudy, T.E. (1992). Cognitive factors and persistent pain: A glimpse into Pandora's Box. Cognitive Therapy and Research, 16 (2), 99-122.

Turner, J.A., & Romano, J.M. (1984). Self report screening measures for depression in chronic pain patients. Journal of Clinical Psychology 40, 909-913.

Turner, J.A., & Ramano, J.M. (1984). Evaluating psychologic interventions for chronic pain: Issues and recent developments. Advances in Pain Research and Therapy, 7, 257-296.

Verhaag, D.A., & Ikeda, R. (1991). Prescribing for chronic pain. Journal of Psychoactive Drugs, 23, (4) 433-434.

Ward, N.G. (1990). Pain and depression. In J.J. Bonica (ed.), The management of pain. (pp. 310-319) Philadelphia: Lea & Febiger.

Weingarten, M.A. (1991). Chronic opioid therapy in patients with a remote history of substance abuse. Journal of Pain and Symptom Management, 6 (1), 2-3.

Weissman, D.E., & Haddox, J.D. (1989). Opioid pseudoaddiction: An iatrogenic syndrome. Pain, 36, 363-366.

Wechsler, D. (1981). WAIS-R manual. New York: Psychological Corporation.

Wilson, P.H., (1992). Relapse prevention: Conceptual and methodological issues. In P.H. Wilson (Ed.), Principles and practice of relapse prevention. (pp. 1-22). New York: Guilford Press.

Zenz, M. (1991). Morphine myths: Sedation, tolerance, addiction. Postgraduate Medical Journal, 67 (5), S100-S102.

Zenz, M., Strumpf, M., & Tryba, M. (1992). Long-term oral opioid therapy in patients with chronic nonmalignant pain. Journal of Pain and Symptom Management, 7 (2), 69-77.

Zenz, M., Strumpf, M., & Willweber-Strumpf, A. (1990). Oral opioids in patients with non-malignant pain. Der Schmerz, 4, 14-21.

Zinberg, N.E. (1984). Drug set and setting: The basis for controlled intoxicant use. New Haven, CT: Yale University Press.

Appendices

Appendix 1

THREE WEEK MUSCULOSKELETAL PROGRAMME

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:00	To 8:30	NURSING	LIASON	SESSION
8:30 To 10:00 Nursing	8:30 To 9:30 Fitness Gym	8:30 To 10:00 Group Session (Psychologist)	8:30 To 9:00 Exercises . 9:00 To 9:30 Relaxation Tape	8:30 To 9:30 Nursing
10:00 To 10:30 Morning Tea	9:45 To 10:00 Morning Tea	10:00 To 10:30 Fitness/Pool	9:30 To 10:00 Fitness/Pool	9:30 To 10:00 Fitness/Pool
10:30 To 12:00 Group Session with O/T	10:00 To 11:30 Group Session Diet/Pharm	10:30 To 11:00 Morning Tea	10:00 To 10:30 Fitness/Gym	10:00 To 10:30 Morning Tea
	11:45 To 12:15 Fitness/Pool	11:00 To 12:00 Community Resources Session	10:30 To 12:00 Doctor's Education Session	10:30 To 11:30 Fitness/Gym
12:00 To 12:30 Lunch	12:30 To 1:00 Lunch	12:00 To 12:30 Lunch	12:00 To 12:30 Lunch	11:30 To 12:30 Nursing
12:45 To 1:45 Fitness	1:00 To 2:30 Group Session with O.T.	12:30 To 2:00 Video/ Education	1:00 To 1:30 Walk (Fitness)	12:30 To 1:00 Lunch
	2:30 To 3:00 Afternoon Tea	2:00 To 2:30 Relaxation Training	1:30 To 3:00 Group Session (psychologist)	1:00 To 2:30 Group Session (Social Worker)
2:00 To 4:20 O/T Activities	3:00 To 3:30 Relaxation Training	2:30 To 4:20 O.T. Activities	3:00 To 3:30 Afternoon Tea	2:30 To 3:00 Afternoon Tea
			3:30 To 4:00 Relaxation Training	3:00 To 4:00 Recreational Swimming
	VISITING	**AFTER**	**5pm**	
7pm To 9pm Gym/Pool	7pm To 9pm Recreation with O.T.	7pm To 9pm Hostel/Pool		

Appendix 2

CONSENT FORM

Controls

Reason for the project:

As part of the Musculoskeletal Medicine pain management programme we are doing some research to see how good the programme is at helping people with their medication usage.

Your task in this project:

You have been selected to participate in a control group. The programme that was run last month was especially for people who use opioid medications and we would like to compare the results of their programme with the group results of your programme.

You will be asked to fill out some extra questionnaires before and after the pain management programme as well as a 'pain and medication usage diary'. These questionnaires are not a part of the standard programme but will be useful not only to evaluate the effectiveness of the programme but also to provide valuable additional information about your situation.

Whether you choose to participate in this research or not it will have absolutely no effect on the commencement date of the programme you have already been allocated to. You are free to refuse to participate in this study or to withdraw at any time, this decision will have no influence on any future treatment you will receive.

Time required:

The questionnaires should take about two hours to complete on two separate occasions. The pain and medication usage diary should take a total of about 10 minutes a day for 7 weeks to complete.

A time and place that is suitable to you will be arranged to complete the questionnaires and learn how to fill in the 'pain and medication usage diary'.

Confidentiality:

Any information obtained about you from this research will be kept confidential. In order to protect confidentiality, code numbers, not names, will be used on all forms and in all computer files. Your identity will not be revealed in any description or publication of this research.

Please tick one of the following:

_____I do want the results of my questionnaires sent to my General Practitioner.

_____I do not want the results of my questionnaires sent to my General Practitioner.

Name of researcher: Mark Turner

I have read and understood the consent form. I agree to participate in the project described above, on the understanding that if at any time I wish to withdraw from the experiment I may, without prejudice, do so. All information collected will be confidential as will the identity of participants.

Name: .....

Signature: ..... Date: .....

Witnessed by: ..... Date: .....

Researcher: ..... Date: .....

CONSENT FORM

Subjects

Reason for the project:

As part of the Musculoskeletal Medicine pain management programme we are doing some research to see how good the programme is at helping people with their medication usage.

Your task in this project:

Your name has been selected from the waiting list of people who are about to enter the Musculoskeletal pain management programme. If you agree to take part in this research you will be asked to answer some extra questions that are not a part of the normal programme. The questions will be based on the types of drugs that you are taking for your pain management and how and why you use them. In addition you will be asked to fill in a pain and medication usage diary.

You are free to refuse to participate in this study or to withdraw at any time, this decision will have no influence on any future treatment you will receive.

Time required:

The questionnaires should take about two hours to complete on three separate occasions: Once before you commence the Musculoskeletal pain management programme and again at the completion of this programme. Additionally, the questionnaires may be given 6 months after your completion of this programme to see if the effects are long lasting. A time and place that is suitable to you will be arranged to complete the questionnaires. The pain and medication usage diary should take a total of about 10 minutes a day for 7 weeks to complete.

Confidentiality:

Any information obtained about you from this research will be kept confidential. In order to protect confidentiality, code numbers, not names, will be used on all forms and in all computer files. Your identity will not be revealed in any description or publication of this research.
Please tick one of the following:

____ I do want the results of my questionnaires sent to my General Practitioner.

____ I do not want the results of my questionnaires sent to my General Practitioner.

Name of researcher: Mark Turner

I have read and understood the consent form. I agree to participate in the project described above, on the understanding that if at any time I wish to withdraw from the experiment I may, without prejudice, do so. All information collected will be confidential as will the identity of participants.

Name: .....

Signature: ..... Date: .....

Witnessed by: ..... Date: .....

Researcher: ..... Date: .....

Appendix 3

Pain Locus of Control Scale (PLoC)

P.L.o.C.

INSTRUCTIONS

This is a questionnaire to find out how you see the causes and control of your pain.
Each statement is followed by four boxes:

☐	☐	☐	☐
Very True	Somewhat True	Somewhat Untrue	Very Untrue

Please rate each statement by marking "X" in the box which best shows how much you currently feel the statement applies to you.

1. I need my medication to control my pain:

☐	☐	☐	☐
Very True	Somewhat True	Somewhat Untrue	Very Untrue

2. My pain will often go away if I let myself relax physically:

☐	☐	☐	☐
Very True	Somewhat True	Somewhat Untrue	Very Untrue

3. No matter what I do, I cannot seem to have an effect on my pain:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

4. I can make my pain decrease if I concentrate on pain-free parts of my body:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

5. I need the help of others to control my pain:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

6. I can sometimes reduce my pain by imagining that the pain I feel is really pleasant stimulation:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

7. Only I can help myself with my pain:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

8. My pain level will go down if I remain passive and don't respond to it:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

9. My doctors can help me with my pain:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

10. Sometimes I can reduce my pain by not paying attention to it:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

11. I am responsible for how pain effects:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

12. I can make pain go away by believing it will go away:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

13. My pain just comes and goes, regardless of what I do or think:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

14. My pain will decrease if I think of things going on around me:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

15. Being in pain is never my choice:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

16. I can reduce my pain if I imagine a situation in which I have been pain-free in the past:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

17. Medication helps me control my pain:

Very True	Somewhat True	Somewhat Untrue	Very Untrue

18. My pain will get better if I think of pleasant thoughts:

☐	☐	☐	☐
Very True	Somewhat True	Somewhat Untrue	Very Untrue

19. My pain is out of control:

☐	☐	☐	☐
Very True	Somewhat True	Somewhat Untrue	Very Untrue

20. Just slowing down and regulating my breathing pattern often helps my pain.

☐	☐	☐	☐
Very True	Somewhat True	Somewhat Untrue	Very Untrue

Appendix 4

Three Week Pain Management Programme
Evaluation Questionnaire

1. How much use was this programme to you?

1_____2_____3_____4_____5_____6_____7

no use some use very useful

Comments:

---

2. Was this programme able to provide you with useable skills to help you control your pain?

1_____2_____3_____4_____5_____6_____7

not at all somewhat very much so

List skills most valuable to you and any comments.

---

3. Do you think, as a result of the programme, there has been a change in how well you are able to cope with your pain without relying so much on the use of medications?

1_____2_____3_____4_____5_____6_____7

rely less on medication no change rely more on medication

4. Do you feel more confident in your ability to stabilise your medication as a result of this programme?

1_____2_____3_____4_____5_____6_____7

very confident somewhat not at all confident

Comments:

---

5. How confident are you that you will keep doing the things you have learnt?

1_____2_____3_____4_____5_____6_____7

very confident somewhat not at all confident

Comments:

---

6. Would you recommend this programme to others?

1_____2_____3_____4_____5_____6_____7

never maybe definitely

Comments:

---

7. Do you feel better about yourself now that you have completed the programme?

1_____2_____3_____4_____5_____6_____7

not at all somewhat very much so

Comments:

---

8. Are there any activities you will do after leaving that you would not have done before the programme?

Comments:

Thank you for completing the questionnaire.

Daily Pain and Medication Usage Diary

Pain Severity Scale

Subject No.____ Date_____ No pain 0————10 unbearable pain

Time	Pain before	Mood before	Alternative pain control	Med: type	Med: amount	Situation (in which med. taken)	Mood after	Pain after
12.00am								
1.00am								
2.00am								
3.00am								
4.00am								
5.00am								
6.00am								
7.00am								
8.00am								
9.00am								
10.00am								
11.00am								
12.00pm								
1.00pm								
2.00pm								
3.00pm								
4.00pm								
5.00pm								
6.00pm								
7.00pm								
8.00pm								
9.00pm								
10.00pm								
11.00pm								